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August, 2011

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

Biological Technical Report

POWER
ENGINEERS

TABLE OF CONTENTS

1.0 INTRODUCTION 1
- 1.1 Study Personnel 1
- 1.2 Project Description 2
  - 1.2.1 Construction of New 230 kV Double-Circuit Transmission Line 4
  - 1.2.2 Addition of New 230 kV Circuit 14
  - 1.2.3 Reconductoring of Existing Transmission Line 14
  - 1.2.4 Construction of New Switching Station 15
  - 1.2.5 Expansion of Existing Switching Station 16
  - 1.2.6 Project-Wide Mitigation Measures 16
  - 1.2.7 Construction Work Force and Schedule 16

2.0 REGULATORY FRAMEWORK 18
- 2.1 Federal 18
- 2.2 State 22
- 2.3 Local 23
- 2.4 Overview of Special Habitat Management Areas 23
  - 2.4.1 Los Angeles County Significant Ecological Areas 24
  - 2.4.2 USFWS-Designated Critical Habitat 24
  - 2.4.3 Antelope Valley California Poppy Reserve 25
  - 2.4.4 Arthur B. Ripley Desert Woodland State Park 25
  - 2.4.5 Mountain Recreation and Conservation Authority Property 25
  - 2.4.6 Riparian Conservation Area 25
- 2.5 Permits Required and Permit Schedule 26

3.0 INVENTORY METHODS 27
- 3.1 Approach to Data Collection 27
- 3.2 Literature Review 28
- 3.3 Biological Reconnaissance Surveys 28
- 3.4 Protocol Surveys 32
  - 3.4.1 Special-Status Amphibian Surveys 33
  - 3.4.2 Special-Status Plant Surveys 33
  - 3.4.3 Spotted Owl Focused Surveys 34
  - 3.4.4 Joshua Tree Surveys 35
  - 3.4.5 Bat Surveys 35
  - 3.4.6 Desert Habitat Assessment 35
  - 3.4.7 Avian Habitat Assessment 35
  - 3.4.8 Invasive Weed Species Surveys 36
  - 3.4.9 Avian Risk Assessment 36
  - 3.4.10 Riparian Conservation Area (RCA) Surveys 37
- 3.5 Survey Limitations 37
- 3.6 Data Analysis and Use 38

4.0 AFFECTED ENVIRONMENT 40
- 4.1 Northern Region 40
- 4.2 Central Region 42

4.3 Southern Region 46

4.4 Vegetation Communities 47
  4.4.1 Vegetation Types Observed 47

4.5 Common Wildlife 53
  4.5.1 Mammals 54
  4.5.2 Avifauna (Birds) 55
  4.5.3 Herpetofauna (Reptiles and Amphibians) 56

4.6 Special-Status Species 56
  4.6.1 Special-Status Plant Species 58
  4.6.2 Special-Status Wildlife Species 108
  4.6.3 Wildlife Movement Corridors 175
  4.6.4 MIS (for ANF) 175

5.0 IMPACT ASSESSMENT 177

5.1 Significance Criteria 177

5.2 Sensitivity Values 178
  5.2.1 Wildlife Sensitivity Levels 178
  5.2.2 Vegetation Sensitivity Levels 179

5.3 Impact Types 182
  5.3.1 Wildlife Impact Level 182
  5.3.2 Vegetation Impact Levels 183
  5.3.3 Helicopter Impact Assessment 185

5.4 Impact Assessment Model Methodology 190
  5.4.1 230 kV Transmission Line Impact Assessment 190

5.5 Mitigation Planning 190
  5.5.1 General Practices 191
  5.5.2 Mitigation Measures 195
  5.5.3 Residual Impact Level 195

6.0 PROPOSED PROJECT IMPACTS AND MITIGATION MEASURES 196

6.1 Vegetation Community Impacts 196

6.2 Wildlife Impacts 215

6.3 Special-Status Species 224
  6.3.1 Plants 224
  6.3.2 Birds 226
  6.3.3 Mammals 232
  6.3.4 Reptiles 235
  6.3.5 Amphibians 238
  6.3.6 Management Indicator Species 241

7.0 IMPACT RESULTS 244

7.1 New 230 kV Transmission Line 244
  7.1.1 Segment A 244
  7.1.2 Segment B 253
  7.1.3 Segment C 262
  7.1.4 Segment D 271
  7.1.5 Segment E 287
  7.1.6 Segment F1 294

7.1.7 Segment F2 ... 300
7.1.8 Segment 115 ... 306
7.1.9 Segment G ... 311
7.1.10 Segment H1 ... 327
7.1.11 Segment H2 ... 332
7.1.12 Segment I ... 341
7.1.13 Segment 2a ... 355

7.2 New 230 kV Circuit ... 363
7.2.1 Segment J ... 364

7.3 Reconductoring ... 377

7.4 New Haskell Canyon Switching Station ... 386

7.5 Expansion of Barren Ridge Switching Station ... 389

8.0 ALTERNATIVES ... 391

8.1 Development of Alternatives ... 391

8.2 Alternatives Description ... 391
8.2.1 Action Alternatives ... 391
8.2.2 No Action Alternative ... 398

8.3 Impact Results - Routing Alternatives ... 398
8.3.1 No Action Alternative ... 403
8.3.2 Alternative 1 (Segments A, C, and D) ... 403
8.3.3 Alternative 2 (Segments A, B, and G) –LADWP's Proposed Action ... 407
8.3.4 Alternative 2a (Segments A, B, G, and 2a) ... 412
8.3.5 Alternative 3 (Segments A, B, F, and I) ... 415

9.0 CUMULATIVE IMPACTS ... 418

9.1 Introduction ... 418
9.1.1 Impact Area ... 418
9.1.2 Reasonably Foreseeable Future Actions ... 418
9.1.3 Direct and Indirect Impacts Summary ... 428
9.1.4 Cumulative Effects Evaluation ... 428

10.0 REFERENCES ... 457

11.0 ACRONYMS AND ABBREVIATIONS ... 469

TABLES

Table 1-1. Anticipated Construction Sequence....17
Table 1-2. Construction Workforce and Schedule....17
Table 2. Permits Required and Permit Schedule....26
Table 3. Existing Vegetation Communities within the Project Area....30
Table 4. Protocol Wildlife Surveys....38
Table 5a. Soil Types Present in the Northern Region....40
Table 5b. Vegetation Types Occurring in the Northern Region....41
Table 5c. Soil Types Present in Central Region....42
Table 5d. Vegetation Types Occurring in the Central Region....44
Table 5e. Soil Series for the Southern Region....46
Table 5f. Vegetation Types within the Southern Region....46
Table 6. Vegetation Communities Observed within the Project Area....54
Table 7. Summary of the Probability of Occurrence of 93 Potentially Occurring Special-Status Plant Species, by Route Alternative....57
Table 8. Special-Status Plant Species with Potential to Occur within the Project Area....151
Table 9. Sensitive Wildlife Species with Potential to Occur in the Project Area....171
Table 10. Management Indicator Species Selected for Project Evaluation....176
Table 11. Sensitivity of Wildlife species....179
Table 12. Sensitivity of Plant species....180
Table 13. Sensitivity of Vegetation Communities....181
Table 14. Impact Summary to Biological Resources....189
Table 15. General Practices....191
Table 16. Summary of Estimated Impacts to Vegetation Communities on Federal Lands....203
Table 17. General Effects of Herbicides on Plant and Wildlife Species....210
Table 18. RCA Crossing Points Summary....213
Table 19. Mitigation Measures Applicable to Segment A....252
Table 20. Biological Resources Found within Segment A and Potential Acreage of Disturbance....252
Table 21. Mitigation Measures Applicable to Segment B....261
Table 22. Biological Resources Found within Segment B and Potential Acreage of Disturbance....262
Table 23. Mitigation Measures Applicable to Segment C....270
Table 24. Biological Resources Found within Segment C and Potential Acreage of Disturbance....271
Table 25. Mitigation Measures Applicable to Segment D....285
Table 26. Biological Resources Found within Segment D and Potential Acreage of Disturbance....286
Table 27. Mitigation Measures Applicable to Segment E....293
Table 28. Biological Resources found within Segment E and Potential Acreage of Disturbance....294
Table 29. Mitigation Measures Applicable to Segment F1....299
Table 30. Biological Resources Found within Segment F1 and Potential Acreage of Disturbance....300
Table 31. Mitigation Measures Applicable to Segment F2....305
Table 32. Biological Resources Found within Segment F2 and Potential Acreage of Disturbance....306
Table 33. Mitigation Measures Applicable to Segment 115....311
Table 34. Biological Resources Found Within Segment 115 and Potential Acreage of Disturbances....311
Table 35. Mitigation Measures Applicable to Segment G....326
Table 36. Biological Resources Found within Segment G and Potential Acreage of Disturbance....327
Table 37. Mitigation Measures Applicable to Segment H1....331
Table 38. Biological Resources Found within Segment H1 and Potential Acreage of Disturbance....332
Table 39. Mitigation Measures Applicable to Segment H2....340
Table 40. Biological Resources Found within Segment H2 and Potential Acreage of Disturbance....340
Table 41. Mitigation Measures Applicable to Segment I....353
Table 42. Biological Resources Found within Segment I and Potential Acreage of Disturbances....354
Table 43. Mitigation Measures Applicable to Segment 2a....362

Table 44. Biological Resources Found within Segment 2a and Potential Acreage of Disturbances. 363
Table 45. Mitigation Measures Applicable to New 230 kV Circuit (Segment J) 376
Table 46. Mitigation Measures Applicable to Reconductoring (A, B, G, and K)....................................385
Table 47. Biological Resources Alternative Comparison Summary Table 399
Table 48. Potential Biological Impacts Associated with Alternative 1..406
Table 49. Potential Biological Impacts Associated with Alternative 2..410
Table 50. Potential Biological Impacts Associated with the Temporary Transmission Line Alternative 411
Table 51. Potential Biological Impacts Associated with Alternative 2a..413
Table 52. Potential Biological Impacts Associated with Alternative 3..416
Table 53. Proposed Generation Projects in the Project Vicinity...422
Table 54. BLM Ridgecrest Office Applications for Wind and Solar Energy Generation Projects in the Project Vicinity. 423
Table 55. Estimated Desert Tortoise Density (/km^2) in California Recovery Units (2001 – 2010) 437

FIGURES

Figure 1-1. LADWP's Proposed Action Components...3
Figure 1-2. Types of Towers..4
Figure 1-3. Four-Circuit Towers To be Utilized..6
Figure 1-4. Typical Tower Components 7
Figure 1-5. Preliminary Routing Segments...9
Figure 1-6. Three-Circuit Tower Types...11
Figure 1-7. Three-Circuit Tower Mitigation...12
Figure 5-1. Impact Model Used In Assigning Impact Levels Within Alternate Corridors of BRRTP.....187
Figure 8-1. Action Alternatives 392
Figure 8-2. Identified Helicopter Mitigation Locations..394
Figure 8-3. Avenue L Re-route on Alternative 3 397
Figure 9-1. Cumulative Projects 419

APPENDICES

Appendix A: Maps of Special-Status Wildlife Occurrences on Angeles National Forest (ANF) Lands within the BRRTP Project Area
Appendix B: Maps of Special-Status Plant Occurrences on Angeles National Forest (ANF) Lands within the BRRTP Project Area
Appendix C: Biological Impact Tables
Appendix D: Federal and State Contact Summaries
Appendix E: Detailed Construction, Operation, and Maintenance Process

1.0 Introduction

The City of Los Angeles Department of Water and Power (LADWP) is proposing the Barren Ridge Renewable Transmission Project (BRRTP or Project) to access clean, renewable resources in the Tehachapi Mountains and Mojave Desert areas, and to improve reliability and upgrade transmission capacity.

LADWP, the US Department of Agriculture, Forest Service (USFS or Forest Service) and the U.S Department of the Interior, Bureau of Land Management (BLM) are preparing a joint Environmental Impact Statement (EIS) / Environmental Impact Report (EIR) for the proposed BRRTP. LADWP is the California Environmental Quality Act (CEQA) Lead Agency, while the USFS and BLM are the federal Co-Lead Agencies under the National Environmental Policy Act (NEPA). An EIS/EIR is an informational disclosure document used to inform agency decision makers and the public of the potential significant environmental effects of a project, identify possible ways to eliminate or minimize the potential significant effects, and describe reasonable alternatives to the Proposed Action /Project.

This Technical Report analyzes the potential environmental effects on biological resources from the proposed Project. The proposed project would allow LADWP to access clean, renewable energy sources in the Mojave Desert and Tehachapi Mountain areas. The existing biological environment, sensitive plant and wildlife species, and vegetation communities supported within and adjacent to the Project study area located in Los Angeles and Kern County, California are described in this section. This section also identifies expected biological resource impacts of the proposed segments and proposed mitigation to reduce potential impacts to less-than-significant status. The purpose of this study and analysis is to review the proposed Project in sufficient detail to determine to what extent any species currently listed or formally proposed for listing as endangered or threatened under the federal Endangered Species Act (ESA) and California Endangered Species Act (CESA), or designated as sensitive or of special concern by the Regional Forester, R5-USDA, California Department of Fish and Game (CDFG), and BLM may be affected.

The analysis consists of a review of published peer-reviewed documents, databases and biological reports in conjunction with biological field surveys to determine areas that have suitable habitat to potentially support listed, proposed for listing, and candidate threatened and endangered species, and other identified sensitive species. In compliance with the California Environmental Quality Act (CEQA) and U.S. Endangered Species Act (ESA), the project proponents and lead agency have consulted with the United States Department of the Interior, U.S. Fish and Wildlife Service (USFWS) and CDFG management and staff. The purpose of these consultation meetings and associated correspondences was to help identify biological issues, study potential occurrences and distribution of plants and wildlife and their habitats, and develop survey and mapping protocols to be used to prepare biological studies for the project. This coordination is ongoing; refer to Appendix D for a description of coordination and correspondence with both state and federal agencies.

Reconnaissance-level habitat assessments and protocol surveys were conducted in the appropriate survey window from 2008 to 2010. Results of each study were analyzed and used to establish the baseline data that analyzed impacts for each alternative.

1.1 STUDY PERSONNEL

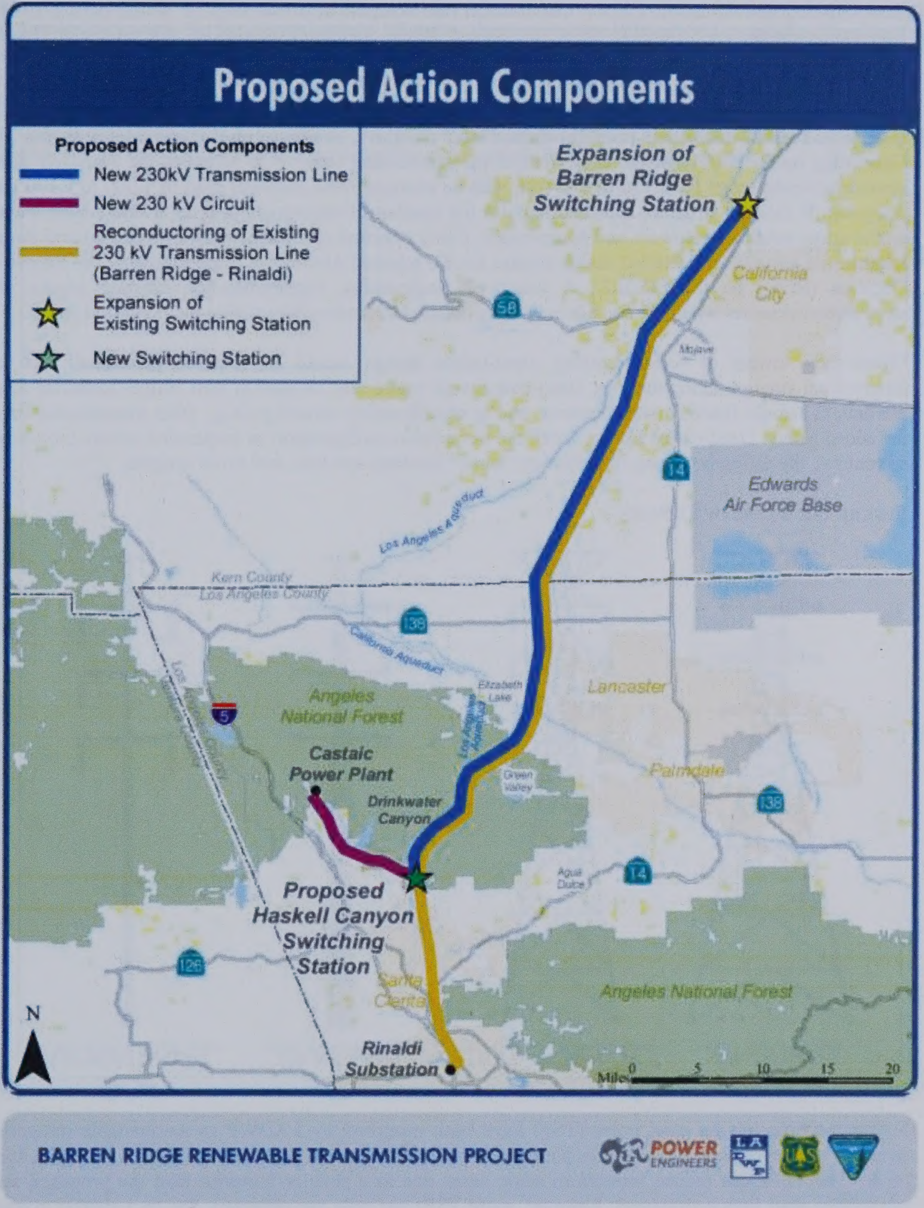
The biological resource study team was comprised of several biologists and botanists, including specialists from POWER Engineers, Inc. (POWER), Garcia and Associates (GANDA), USFS, and BLM. The study team surveyed, collected and interpreted data from the Project area. Vanessa Santistevan with POWER was the principal biological investigator responsible for coordinating data collection, input and review, and agency contacts. Ryan Winkleman with POWER was responsible for data collection, input and review. Beth Colket with POWER was responsible for the input and review of the data. Dave Kelly with GANDA was responsible for coordination of data collection and review. The remainder of the team members and survey preparers are listed in the appendices.

1.2 PROJECT DESCRIPTION

The BRRTP would be located in Kern and Los Angeles counties. As proposed by LADWP, it would be approximately 76 miles in length extending from the Barren Ridge Switching Station to Rinaldi Substation, and extending approximately 12 miles from the Castaic Power Plant to the proposed Haskell Canyon Switching Station. As shown in Figure 1-1, the proposed BRRTP would include the following:

1) Construction of approximately 61 miles of a new 230 kilovolt (kV) double-circuit transmission line from the LADWP Barren Ridge Switching Station to Haskell Canyon;
2) Addition of approximately 12 miles of a new 230 kV circuit on the existing double-circuit structures from Haskell Canyon to the Castaic Power Plant;
3) Reconductoring of approximately 76 miles of the existing Barren Ridge-Rinaldi (BR-RIN) 230 kV transmission line with larger capacity conductors between the Barren Ridge Switching Station and the Rinaldi Substation;
4) Construction of a new switching station in Haskell Canyon;
5) Expansion of the existing Barren Ridge Switching Station.

FIGURE 1-1. LADWP'S PROPOSED ACTION COMPONENTS


Proposed Action Components
Proposed Action Components
New 230kV Transmission Line
New 230 kV Circuit
Reconductoring of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
Expansion of Existing Switching Station
New Switching Station
Expansion of Barren Ridge Switching Station
California City
Mojave
58
14
Edwards Air Force Base
Los Angeles Aqueduct
Kern County
Los Angeles County
138
California Aqueduct
Elizabeth Lake
Lancaster
Angeles National Forest
5
Castaic Power Plant
Drinkwater Canyon
Green Valley
Palmdale
138
Agua Dulce
14
Proposed Haskell Canyon Switching Station
126
Santa Clarita
Angeles National Forest
N
Rinaldi Substation
Miles 0 5 10 15 20
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
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LA

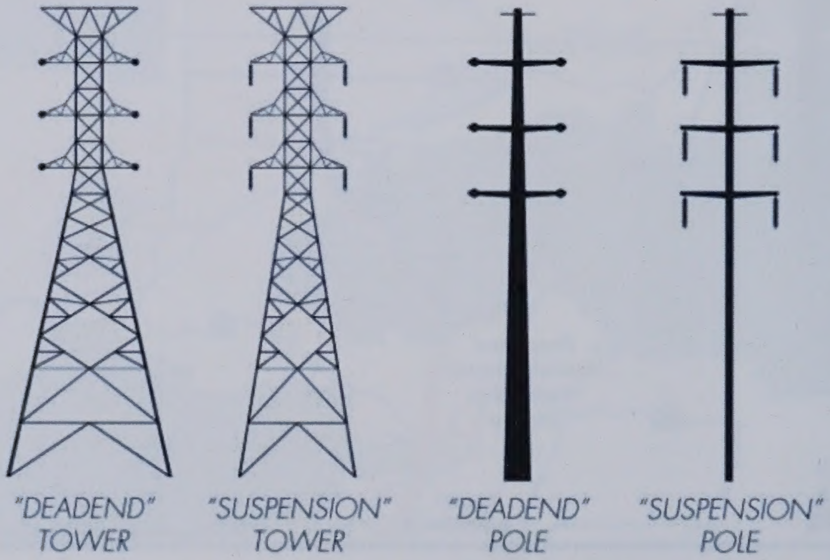
1.2.1 Construction of New 230 kV Double-Circuit Transmission Line

The proposed double-circuit 230 kV transmission line component of the BRRTP would consist of two alternating current (AC) circuits from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station in Haskell Canyon.

The proposed structures for the new transmission line would primarily be self-supporting double-circuit steel lattice towers fabricated from galvanized steel members, as shown on the left side of Figure 1-2. Depending on the environmental conditions of the surrounding terrain, the height of the proposed lattice structures would range from 110 to 195 feet, with an average tower-to-tower span of 1,000 to 1,100 feet. Appendix E lists the structure specifications for the number of structures per mile, average span length, and average heights for towers and components. Exact structure placement would be determined during engineering surveys and detailed design studies for the selected Alternative route following the Record of Decision (ROD) on the EIS/EIR. A variety of engineering, constructability, existing access, and environmental issues would be considered during detailed structure siting within the permitted ROW.

"Dead-end" towers of self-supporting, steel-lattice design would be required periodically to add longitudinal strength along the line. Dead-end towers would also be used at turn (angle) locations along the line, at heavily loaded tower locations, and at specific utility crossings (e.g., other transmission lines) for added safety. Dead-ended towers are of the same basic configuration as suspension towers (non-angle structures), the difference being in the tower "arms," insulator systems, and tower weights.

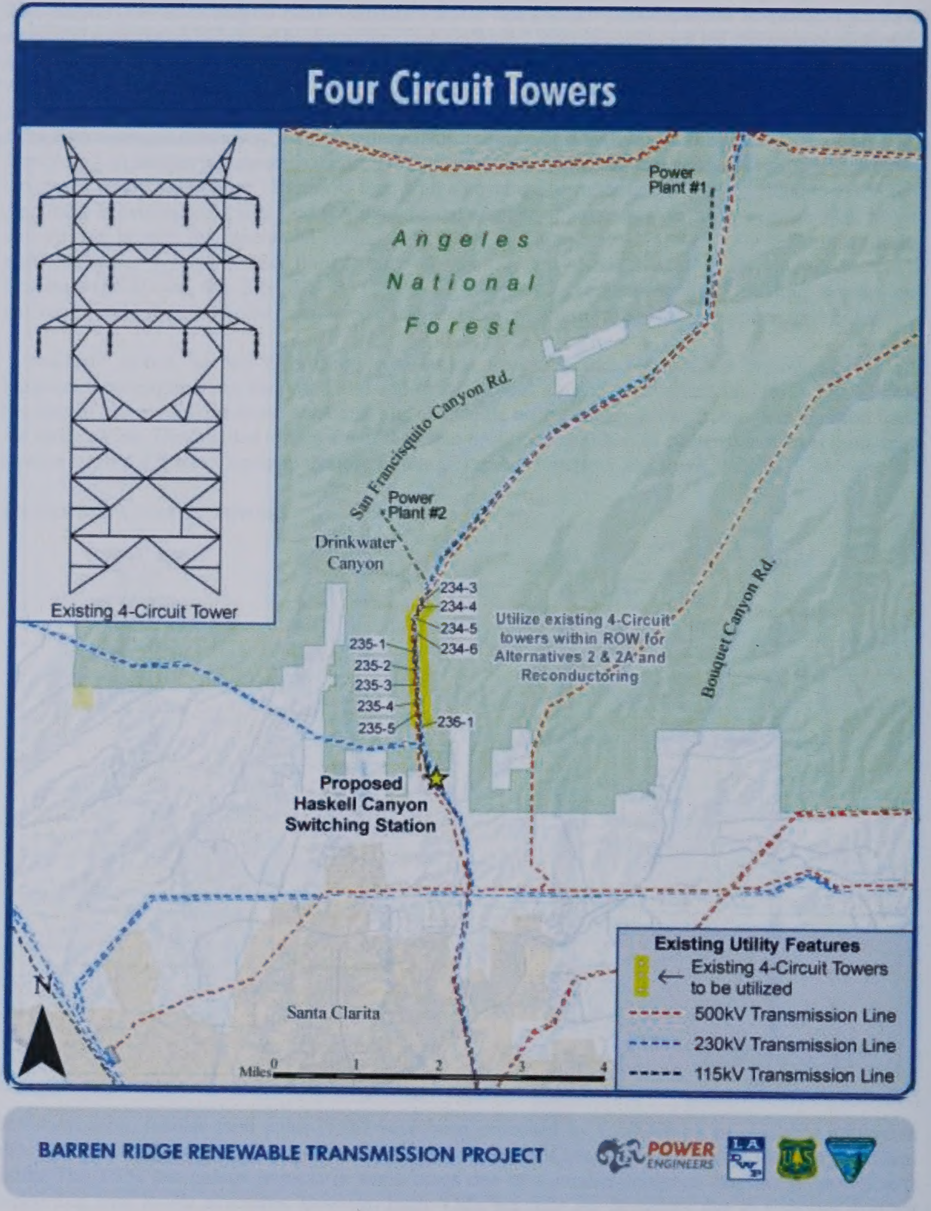
FIGURE 1-2. TYPES OF TOWERS



Self-supporting, tubular steel poles (TSP) have been proposed by LADWP as an available mitigation structure where appropriate to reduce potential impacts, such as conflicts with cultivation on agricultural lands. The TSPs can reduce impacts in some cases due to a smaller footprint than the proposed self-supporting steel lattice structures; however, more TSPs per mile are necessary due to a shorter average span between structures. The TSPs would have an average height range between 95 and 180 feet, depending on the conditions of the surrounding terrain, with an average tower-to-tower span of 700 to 800 feet. Refer to Figure 1-2 for an illustration of the double-circuit poles.

For the majority of the alignment, the two new 230 kV circuits would be placed on new double-circuit transmission towers, but for approximately 1.5 miles, the circuits would be placed on existing four-circuit structures that are located just north of the proposed Haskell Canyon Switching Station. Between where the existing BR-RIN crosses Dry Canyon to the intersection of the Castaic transmission lines, LADWP has existing four-circuit towers with three vacant positions. The existing towers would be utilized in this section for the proposed 230 kV double circuit transmission line instead of constructing new towers. See Figure 1-3 for the location and illustration of the existing four-circuit towers to be utilized.

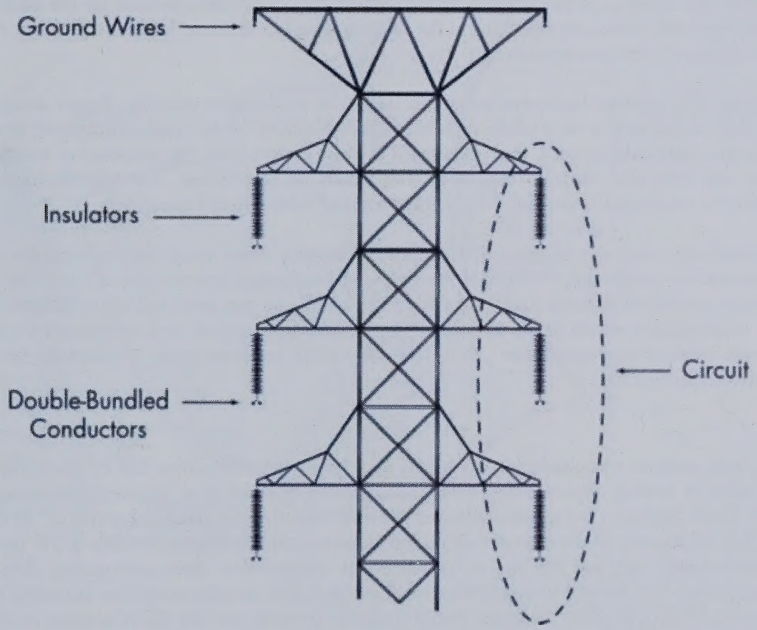
FIGURE 1-3. FOUR-CIRCUIT TOWERS TO BE UTILIZED


Four Circuit Towers
Existing 4-Circuit Tower
Angeles National Forest
Power Plant #1
Power Plant #2
San Francisquito Canyon Rd.
Bouquet Canyon Rd.
Drinkwater Canyon
234-3
234-4
234-5
234-6
235-1
235-2
235-3
235-4
235-5
236-1
Utilize existing 4-Circuit towers within ROW for Alternatives 2 & 2A and Reconductoring
Proposed Haskell Canyon Switching Station
Santa Clarita
N
Miles 0 1 2 3 4
Existing Utility Features
Existing 4-Circuit Towers to be utilized
500kV Transmission Line
230kV Transmission Line
115kV Transmission Line
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS

The self-supporting steel lattice structures and TSPs would utilize concrete foundations. Steel lattice structures would require four footings (one for each leg); TSPs would require single footings. Footings would be steel-reinforced concrete pier type and be cast in place. The typical design for the concrete footings for lattice structures would be between 2.5 and 5.0 feet in diameter, with an average depth of 20 feet depending on soil conditions. Typical design for single foundations for TSPs would include augured holes approximately five to seven feet in diameter and 15 to 30 feet deep, depending on conditions. Formwork steel reinforcing would be assembled in the hole prior to casting concrete in place. Reinforcing steel would become integral to the lower leg of the steel lattice structure during assembly. An above-ground concrete form placed over each hole would result in a final concrete foundation height of 0.5 to 2.0 feet above ground level.

As illustrated in Figure 1-4, Typical Tower Components, each tower carries conductors ("wires"), insulators, and ground wires. The conductor being considered for the new double-circuit 230 kV transmission line and installation of the Castaic – Haskell Canyon #4 circuit on existing structures is a bundled 715.5 kcmil "Starling" ACSS/AW. The reconductoring of the BR-RIN transmission line between Barren Ridge Switching Station and Rinaldi Substation would require a bundled 1,433.6 kcmil "Merrimack" ACSS/TW/HS conductor.

FIGURE 1-4. TYPICAL TOWER COMPONENTS



Each circuit would consist of three phases ("wires") as illustrated in Figure 1-4. To increase the current-carrying capability of the transmission lines and reduce power loss, the Proposed Action (Alternative 2) would utilize bundled conductors installed for each phase. The bundled conductors would consist of two conductor cables connected by a spacer. The new 230 kV double-circuit transmission line would consist of a total of six double-bundled (12 individual) wires.

Minimum conductor height above the ground, under normal operation of the line, is 30 feet. Greater clearances may be required in certain areas to allow for clearances over trees or other vegetation that

could pose a risk to the operation of the transmission line. Minimum conductor clearance would dictate the exact height of each tower based on topography and safety clearance requirements.

Insulators are used to provide the physical connection of conductors to structures. These system components are made of very low conducting materials (polymer insulators) that inhibit the flow of electric current from energized conductors to ground or to other energized system elements. Insulators and their associated hardware are to be configured in an "I" assembly to support conductors while maintaining required distances between phases and grounded structures. Each "I" string would consist of six-inch diameter insulators between six and eight feet long.

To shield conductors from hazard of direct lightning strikes by transferring lightning currents into the ground, overhead ground wires (shield wires) or fiber optic ground wire would be installed on top of new structures.

Construction of a transmission line involves the following general sequence of events: surveying activities; identifying and constructing access roads; clearing ROW and tower sites (including construction yards and batch plants); installing foundations; assembling and installing the towers; clearing, pulling, tensioning, and splicing; installing ground wires and conductors; installing counterpoise; switching station tie-in; and site upkeep and site reclamation. Various phases of construction would occur at different locations throughout the construction process for the BRRTP. This would require several contractors operating at the same time and in different locations. Refer to Appendix E for a description of each construction activity.

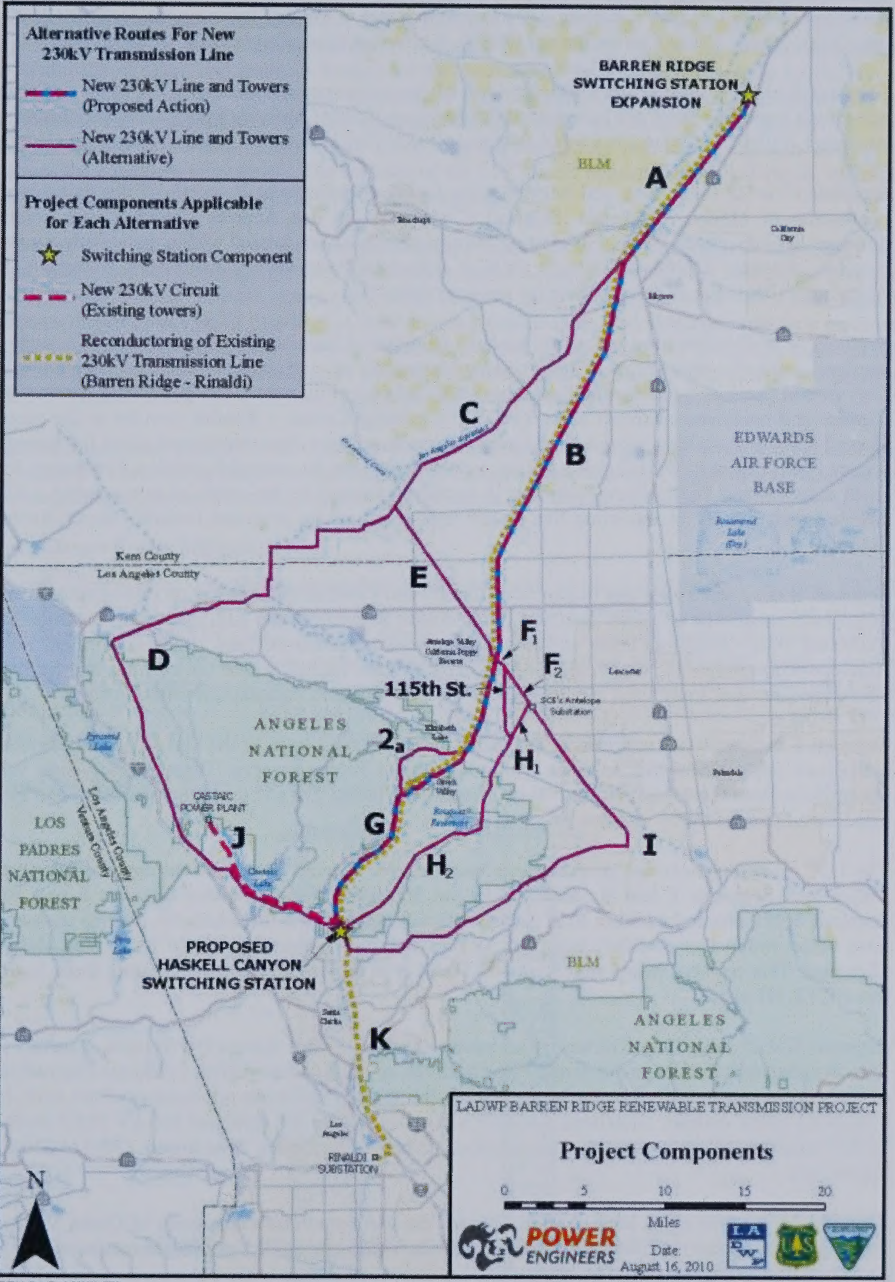
Existing paved and unpaved highways and roads would be used where possible. Roads along existing utility corridors would also be used where possible to minimize new access road construction. In locations where existing roads could be used, that are located in close proximity to the proposed or existing ROW centerlines, only new spur roads to the tower sites would be constructed. The specific locations and design of all new access and spur roads would be determined during final Project design.

It is anticipated that one or two construction yards or staging areas would be required for materials storage, construction equipment, construction vehicles, and temporary construction offices. Staging areas would be approximately five acres in size, and located centrally or near each end of the transmission line route. The staging areas would likely be located on previously disturbed land and would be level and surfaced with crushed aggregate base. The LADWP would negotiate with landowners for specific locations of the staging areas.

Routing

In 2007, a siting analysis was conducted to identify appropriate sites for a new 230 kV transmission line. Over 200 miles of routing opportunities were identified and referred to as Segments A through I (see Figure 1-5). These segments were then combined to create end-to-end routing "alternatives" as discussed in Section 8.2. All routing Segments were identified assuming the need for a 200-foot ROW for the new 230 kV transmission line and the use of conventional transmission line construction. However, as discussed in Section 8.2, the end-to-end alternatives have included specific mitigation measures to reduce certain impacts. These mitigation measures would eliminate the need for new ROW in some locations and would require the use of helicopters for tower assembly in designated areas on the ANF. Also, to the maximum extent possible, all existing access and spur roads would be utilized for the construction, operation, and maintenance of the BRRTP. Below is a brief description of each segment.

FIGURE 1-5. PRELIMINARY ROUTING SEGMENTS


Alternative Routes For New 230kV Transmission Line
New 230kV Line and Towers (Proposed Action)
New 230kV Line and Towers (Alternative)
Project Components Applicable for Each Alternative
Switching Station Component
New 230kV Circuit (Existing towers)
Reconductoring of Existing 230kV Transmission Line (Barren Ridge - Rinaldi)
BARREN RIDGE SWITCHING STATION EXPANSION
BLM
A
B
C
D
E
F1
F2
115th St.
2a
G
H1
H2
I
J
K
California City
Mojave
EDWARDS AIR FORCE BASE
Rosamond Lake (Dry)
Kern County
Los Angeles County
Lancaster
SCE's Antelope Substation
Palmdale
ANGELES NATIONAL FOREST
CASTAIC POWER PLANT
LOS PADRES NATIONAL FOREST
Los Angeles County
Ventura County
PROPOSED HASKELL CANYON SWITCHING STATION
RINALDI SUBSTATION
N
LADWP BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
Project Components
0
5
10
15
20
Miles
POWER ENGINEERS
Date: August 16, 2010

Segment A is 13 miles long and runs from LADWP's Barren Ridge Switching Station to the unincorporated community of Mojave, California. It would traverse four miles of BLM managed public lands and parallel LADWP's existing 230 kV Barren Ridge – Rinaldi Transmission Line (BR-RIN) and the 500 kV Pacific Direct Current Intertie (PDCI). It traverses four miles of BLM-managed lands.

Segment B is 27 miles long and starts just north of the unincorporated community of Mojave, California and travels south to a point one mile east of the Antelope Valley California Poppy Reserve. This segment parallels LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines for its entire length.

Segment C is 22 miles long and begins at the location as Segment B, north of the unincorporated community of Mojave, California. Segment C parallels the Los Angeles Aqueduct in a southwest direction to Cottonwood Creek. No existing transmission lines are located within the aqueduct corridor; however, Southern California Edison's (SCE's) Tehachapi Renewable Transmission Project's (TRTP) Alternative 10A is also proposed along the same corridor.

Segment D is 48 miles long and would traverse 16 miles of National Forest System (NFS) lands. This segment generally parallels the Los Angeles Aqueduct in a southwest direction, beginning near Cottonwood Creek and traveling to Lancaster Road. It then travels west to the Interstate 5 freeway utility corridor and continues southeast along LADWP's existing Castaic – Rinaldi corridor to the proposed Haskell Canyon Switching Station. Five high voltage transmission lines are located along the Interstate 5 section of the segment. Oil and gas pipelines are also located in the same I-5 corridor. Continuing further south near Castaic Power Plant, Segment D would be located to the south of two existing LADWP double-circuit 230 kV transmission line towers until reaching the proposed Haskell Canyon Switching Station.

Segment E is 11 miles long and begins near Cottonwood Creek at the intersection of Segments C and D. Segment E travels in a southeast direction and intersects Segment B one mile east of the Antelope Valley California Poppy Reserve. Three existing high voltage transmission lines (Midway-Vincent 500 kV, Antelope-Vincent 230 kV, and Antelope-Mesa 230 kV) are located within the corridor that Segment E would parallel. SCE's proposed TRTP Segment 4 is also proposed adjacent this same corridor.

Segment F is the shortest segment, at four miles in length, and begins at the intersection of Segments B and E one mile east of the Antelope Valley California Poppy Reserve. Three existing high voltage transmission lines (Midway-Vincent 500 kV, Antelope-Vincent 230 kV, and Antelope-Mesa 230 kV) are also located parallel to this segment.

The 115th Street Segment was proposed as a modification to avoid impacts to residents in the Antelope Valley near Segments F and H, described below. It begins mid-way within Segment F near SCE's Antelope Substation and parallels 115th Street south to the California Aqueduct. No existing transmission lines occur within this corridor; however, TRTP's proposed Segment 4 would be located along this alignment. This segment would split Segments F and H as shown in Figure 1-5 creating these Segments into F1, F2, H1 and H2.

Segment G is 21 miles long. Thirteen miles traverse National Forest System (NFS) lands. It travels south from the intersection of Segments B and F one mile east of the Antelope Valley California Poppy Reserve to the proposed Haskell Canyon Switching Station, located near the southern boundary of the ANF. It is a designated utility corridor containing LADWP's existing 230 kV BR-RIN and 500 kV PDCI lines. The BRRTP proposes to use its existing four-circuit structures for two miles, from towers 234-3 to 236-2 (see Figure 1-3).

Segment 2a is seven miles long. It would bypass the unincorporated community of Green Valley and follow an existing fire road through ANF. Segment 2a would not parallel existing transmission facilities, and a new utility corridor would be required.

Segment H is 20 miles long and would parallel SCE's Antelope-Pardee line. It starts near SCE's Antelope Substation at the intersection of Segments F and I and traverses 13 miles of NFS lands to the proposed Haskell Canyon Switching Station. As requested by the USFS, all portions of this segment that fall within the northern and southern borders of the ANF would be constructed entirely by the use of helicopters. The helicopter construction requirement was established by the USFS for consistency of transmission line construction within the existing Antelope-Pardee transmission line corridor. No new access roads would be constructed except those required for pulling and tensioning sites or staging locations for construction materials. The addition of the 115th Street Segment, described above, splits the Segment into H1 (northern portion) and H2 (southern portion).

Segment I is 32 miles long. It begins near the Antelope Substation at the intersection of Segments F and H, and heads southeast through the City of Palmdale, parallel SCE's existing high voltage transmission lines (Midway-Vincent 500 kV, Antelope-Vincent 230 kV, and Antelope-Mesa 230 kV). The segment continues directly south to an existing LADWP transmission line corridor, then continues in a southeast direction to the proposed Haskell Canyon Switching Station, parallel LADWP's existing high voltage transmission lines (Victorville-Rinaldi 500 kV and Adelanto-Rinaldi 230 kV). A majority of this segment would be located outside of NFS lands. Two miles would be located on NFS lands.

Segment J is located parallel to the southern portion of Segment D. Segment J would consist of a new single 230 kV circuit to be placed on existing double-circuit towers between Castaic Power Plant and the proposed Haskell Canyon Switching Station (see discussion in Section 1.2.2 below).

Three-Circuit Tower Mitigation

In areas where there are ROW expansion constraints and where LADWP has existing 230 kV transmission lines, LADWP is proposing to construct three-circuit towers within the existing ROW to carry the existing BR-RIN circuit and the two proposed Barren Ridge to Haskell Canyon (BR-HC) circuits. This would avoid various impacts, including the acquisition of residential property in the unincorporated communities of Willow Springs (milepost 27.1 to 27.6) and Elizabeth Lake and Green Valley (milepost 44.6 to 51.7). Refer to Figure 1-6 for an illustration of three-circuit tower types, and to Figure 1-7, the Three-Circuit Tower Mitigation Map, for proposed locations.

FIGURE 1-6. THREE-CIRCUIT TOWER TYPES

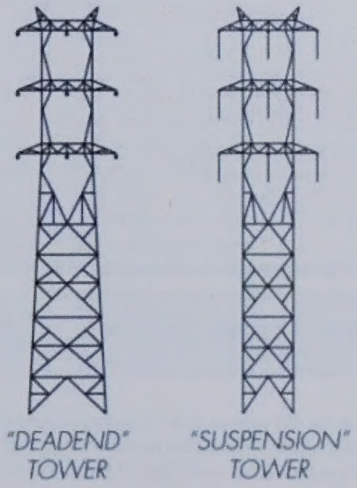
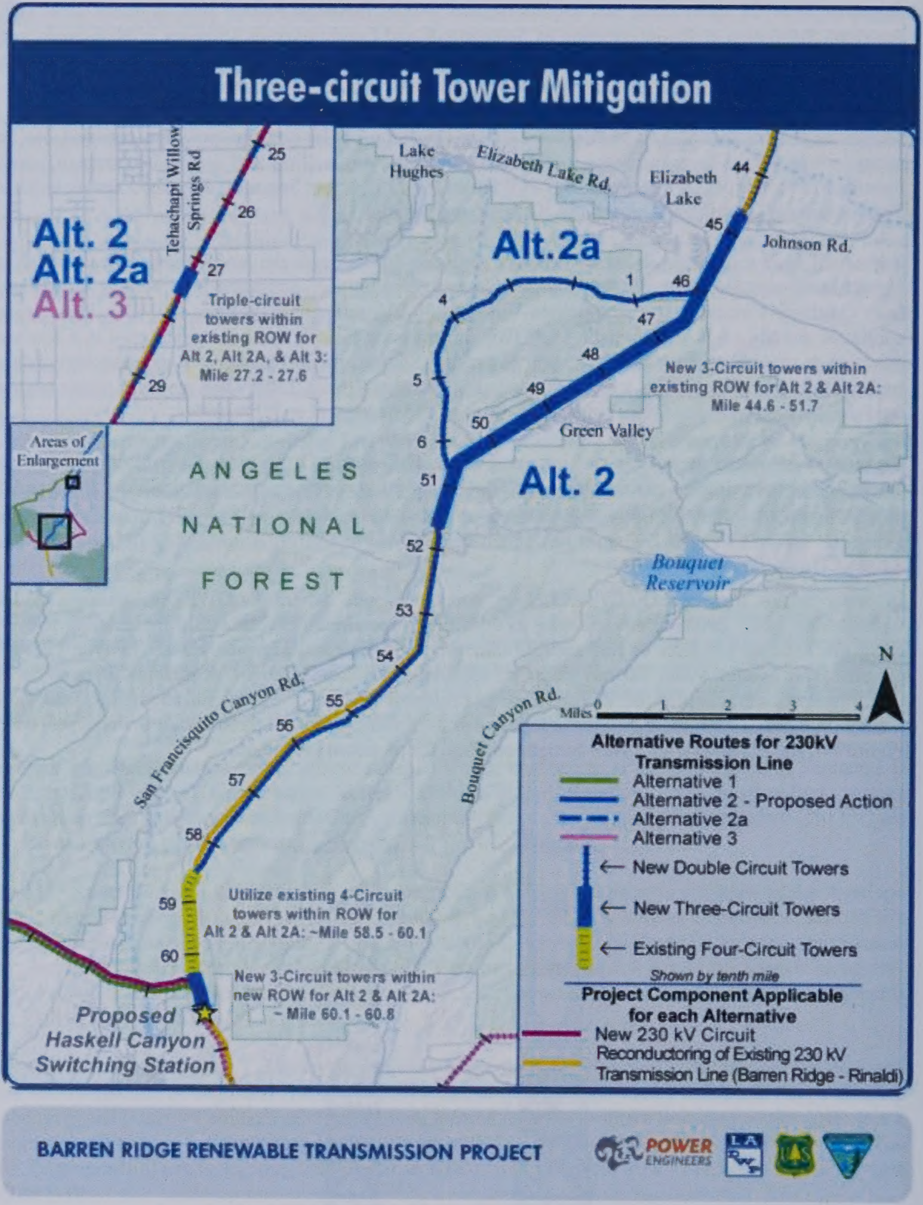


FIGURE 1-7. THREE-CIRCUIT TOWER MITIGATION


Three-circuit Tower Mitigation
Alt. 2
Alt. 2a
Alt. 3
Tehachapi Willow Springs Rd
25
26
27
29
Triple-circuit towers within existing ROW for Alt 2, Alt 2A, & Alt 3: Mile 27.2 - 27.6
Areas of Enlargement
Lake Hughes
Elizabeth Lake Rd.
Elizabeth Lake
Johnson Rd.
Alt.2a
1
4
5
6
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
New 3-Circuit towers within existing ROW for Alt 2 & Alt 2A: Mile 44.6 - 51.7
Green Valley
Alt. 2
ANGELES NATIONAL FOREST
Bouquet Reservoir
San Francisquito Canyon Rd.
Bouquet Canyon Rd.
N
Miles 0 1 2 3 4
Utilize existing 4-Circuit towers within ROW for Alt 2 & Alt 2A: ~Mile 58.5 - 60.1
New 3-Circuit towers within new ROW for Alt 2 & Alt 2A: ~ Mile 60.1 - 60.8
Proposed Haskell Canyon Switching Station
Alternative Routes for 230kV Transmission Line
Alternative 1
Alternative 2 - Proposed Action
Alternative 2a
Alternative 3
← New Double Circuit Towers
← New Three-Circuit Towers
← Existing Four-Circuit Towers
Shown by tenth mile
Project Component Applicable for each Alternative
New 230 kV Circuit
Reconductoring of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS

LADWP must maintain the electrical service along the existing BR-RIN transmission line to avoid impacts to the hydroelectric power plants north of the Barren Ridge Switching Station. Therefore, a temporary transmission line would be constructed to keep the BR-RIN circuit energized during construction of the three-circuit towers. After the temporary line is constructed, the existing BR-RIN single-circuit towers would be removed to allow the new three-circuit towers to be constructed within the existing ROW. Once construction of the three-circuit towers is completed, the temporary transmission line would be removed. The temporary transmission line is expected to be in place from six to nine months.

The temporary transmission line would be 7.5 miles long and would consist of wood and steel single poles with an average height of 95 feet, a 3-foot by 3-foot footprint, and an average of eight poles per mile. Construction would occur within a new temporary 80- to 100-foot ROW. The majority of the temporary transmission line would be constructed along San Francisquito Road. Portions would also be constructed along Elizabeth Lake Road and Johnson Road. Pole placement would be adjacent to public roadways wherever possible. If necessary, temporary ROW on private property would be needed where poles could not be placed within public road ROW. The majority of poles would be direct-embedded when set in place and would not require a permanent foundation. Where additional strength is necessary at larger angle points, steel poles would be required, which could require an excavation approximately 6 feet in diameter by 20 feet deep to accommodate the concrete pier foundation that would be cast in place. Once all the poles have been constructed and the conductor installed, the existing BR-RIN circuit would be connected into the temporary line and energized. The construction would require establishment of a staging area, work areas around poles, and pull and tension sites. Access to pole sites and pull and tension sites would be from the adjacent roadways.

Approximately seven miles of the existing BR-RIN single-circuit towers would be removed, with existing ROW utilized to access the existing towers. The new three-circuit towers would be placed within the existing ROW, utilizing existing access roads. Helicopter Mitigation, as described in this section below, would be applied in steeper terrain if additional access is required. The new three-circuit tower would require a 25-foot by 30-foot structure footprint and an average of seven structures per mile; the average structure height would be 170 feet, with a maximum tower-to-tower span length of 780 feet. The construction process for the new three-circuit towers would be the same as the double-circuit towers discussed above. After completion of construction of the three-circuit towers, the temporary transmission line would be removed and all temporary staging and work area land disturbances would be restored as close to previous conditions as possible and revegetated as required.

Helicopter Mitigation

Within the ANF where the terrain is steep and access is limited, the USFS would require that the new double-circuit 230 kV structures be constructed with the use of helicopters (such as the Hughes 500 or Bell 212, or Sikorsky Skycrane). Although no specific locations for this mitigation have been identified for the Proposed Action, as defined, it is expected USFS would require the helicopter mitigation for construction in any area more than 300 feet from an existing road and with slopes greater than approximately 25 percent. The use of helicopters for the construction of transmission tower structures would eliminate the need for new access roads to structure locations, and would therefore minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites. However, the following site and ground disturbing construction activities would be required to construct the new transmission line within the identified helicopter construction areas: portable landing pads, helicopter fly yards/staging areas and associated access roads, tower structure vegetation clearing, guard structures at major crossings, and access road pullouts.

Temporary 24-foot wide access roads would be required to access the helicopter fly yards/staging areas. The transmission line materials (tower steel, conductor reels, structure hardware, etc.) would be delivered by truck to the helicopter fly yards/staging areas. Vegetation clearing may be required at these sites to

ensure safe working conditions. The fly yards/staging areas would serve as helicopter support yards for fueling and maintenance, as well as for the transport of materials and personnel. Towers may also be assembled in sections at these yards prior to delivery to the tower sites. Heavy lift helicopters would then fly the towers from the yards to the tower sites.

Portable landing pads would be located at each tower site. These pads would allow helicopters to load and unload personnel, tools, and equipment necessary for construction of foundations and assembly of tower structures. Helicopter-constructed towers that would not be in close proximity to existing access roads would utilize micropile foundations. For each tower leg, micropile foundations would use a group of three to eight 6- to 9-inch diameter casings that would be drilled and grouted into the ground. The exposed portion of the pile group would be encased in a reinforced concrete cap from the top of the casings to a depth anywhere from one to eight feet below the ground surface, depending on the terrain.

Conductor installation would proceed in the same manner as the double-circuit tower installation. The equipment necessary for conductor installation would be large, heavy construction equipment that could only be brought in by truck. Some NFS roads could need maintenance or improvement to allow pulling and tensioning, but no new access or spur roads would be created for conductor installation on the helicopter-constructed towers. After Project completion, any maintained access roads to helicopter fly yards/staging areas to would be reduced to 16 feet.

1.2.2 Addition of New 230 kV Circuit

Between the proposed Haskell Canyon Switching Station and the existing Castaic Power Plant, LADWP proposes the addition of 12 miles of a new 230 kV transmission circuit onto existing Castaic – Olive 230 kV Transmission Line structures. The circuit would cross the unincorporated communities of Castaic and Saugus and the city of Santa Clarita. A total of 300 feet of BLM-managed public lands and four miles of NFS lands would be traversed; however, the new circuit would not require a new or additional ROW. This new circuit would be called Castaic – Haskell Canyon #4 and would utilize the same conductor (bundled 715.5 kcmil "Starling" ACSS/AW [aluminum conductor steel supported/aluminum-clad steel wire]) as that proposed for the new 230 kV transmission line between Barren Ridge and Haskell Canyon Switching Stations.

The addition of a new circuit on existing towers would require many of the same construction activities associated with a new transmission line (refer to Appendix E for a description of each construction activity). However, all work would be within existing ROW and no new towers would be constructed. Some towers may need to be modified or reinforced to carry the additional weight of the new conductor. Specific towers requiring reinforcement would be determined following detailed design of the Project. Tower reinforcement would not alter the general design or the location of the structures. This process would generally include reinforced foundations or steel member replacements. Refer to Figure 1-1 for a map showing the location of the new 230 kV circuit.

1.2.3 Reconductoring of Existing Transmission Line

LADWP proposes the reconductoring of 76 miles of the existing BR-RIN 230 kV transmission line with larger conductors from the Barren Ridge Switching Station to Rinaldi Substation. Four miles of BLM-managed public lands, 13 miles of National Forest System (NFS) lands, and 44 miles of private property would be traversed. The existing conductors (954/ 2,312 kcmil) would be replaced with a new 1,433.6 kcmil "Merrimack" ACSS/TW/HS (aluminum conductor steel supported/trapezoidal wires/high strength) conductor. The new conductor would have a larger diameter that allows for greater electrical capacity.

The upgrade of the existing BR-RIN would also require many of the same activities of the new transmission line (surveying of right-of-way [ROW], rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, and cleanup). Removal of the existing conductor would be used to string a pulling line, and this line would then be used to pull in the new conductor. All work would

remain within the existing 250-foot-wide ROW, with no additional ROW required. Some of the towers would need to be modified, replaced, and/or have foundations reinforced or replaced to carry the additional weight of the new heavier conductor. Refer to Figure 1-1 for the location of the reconductoring.

1.2.4 Construction of New Switching Station

As a component of the BRRTP, LADWP proposes the construction of a new switching station in Haskell Canyon, south of the Angeles National Forest on LADWP-owned property at the convergence of several existing and proposed 230 kV transmission lines (the existing BR-RIN, the proposed double-circuit Barren Ridge – Haskell Canyon, existing Castaic – Northridge, Castaic – Sylmar, Castaic – Olive, and the proposed Castaic – Haskell Canyon). Refer to Figure 1-1 for the location of the new switching station.

The station would be approximately 500 feet by 600 feet to accommodate the necessary circuit positions, which are made up of equipment, such as steel support structures, circuit breakers, disconnect switches, and associated equipment, and a relay house and control house containing control and protective relaying equipment. The relay and control houses would each be approximately 30 feet long by 12 feet wide by 10 feet high and constructed of gray concrete block. The station yard would include a paved internal access road approximately 16 feet wide and would be enclosed by chain-link fencing with barbed-wire extension for security. The preliminary grading plan for the station is located in Appendix E.

Necessary pre-construction geotechnical investigation on-site would include six borings by a drill rig to investigate bedrock and soil stability and four cone penetration test locations after site grading to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

Construction of the new Haskell Canyon Switching Station would consist of preconstruction surveys, clearing and grading of access roads, site grading and drainage development, installation of concrete foundations and steel support structures, installation of below- and above-ground electrical conduits for equipment power and control, installation of below- and above-grade grounding conductors, and installation of control and relay houses. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks, and flatbed trailers. Cranes, man-lifts, portable welding units, line trucks, and mechanic trucks would also be required. Construction would require an estimated 12 months with approximately 60 workers.

Site preparation work for the station would involve clearing and grading of access roads, clearing of the switchyard site, the cut and fill grading of the site, and placement and compaction of structural fill that would serve as a base for switching station facilities. The site would be graded to maintain current drainage patterns as much as possible. A 16-foot-wide paved road and a 100-foot by 100-foot gravel parking area would be required. The yard would be covered with crushed-rock aggregate. Native vegetation would be re-established where possible outside the switchyard fence.

Following site grading and development, reinforced concrete foundations would be installed to support the steel structures and electrical equipment and control facilities. It is estimated that 1,500 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 180 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 120-day working period. Subsequent to the foundation installation, trenches would be dug to facilitate placement of copper conductors for the station grounding mat.

Multiple transmission lines would be terminated into the switching station (i.e., the new and existing Barren Ridge – Haskell and Castaic – Haskell Canyon transmission lines) and would need support and require the installation of galvanized steel structures. An existing 115 kV transmission line may need to

be relocated around the proposed station. High-voltage bus work consisting of aluminum jumpers and tubing would be installed within the station.

1.2.5 Expansion of Existing Switching Station

LADWP proposes expansion of the existing Barren Ridge Switching Station to the east side by 235 feet by 500 feet, for a total station size of 485 feet by 500 feet (approximately 5.6 acres). The expansion area of the station would include electrical structures and equipment for the addition of transmission lines, a material staging area, roadway within the station, and a drainage area. The preliminary design layout for the station may be found in Appendix E. Refer to Figure 1-1 for the location of the existing switching station.

Expansion of the existing switching station would be very similar to the construction of the Haskell Canyon Switching Station as described above. Expansion would consist of preconstruction surveys, site preparation and grading, installation of reinforced concrete foundations, installation of electrical conduits for equipment power and control, and installation of structures and equipment.

Necessary pre-construction geotechnical on-site investigation would include two test pits excavated by a backhoe to investigate soil density and settlement, and four cone penetration test locations on-site to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

It is estimated that 700 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 80 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 90-day working period. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks, and flatbed trailers. Cranes, man-lifts, portable-welding units, line trucks, and mechanic trucks would also be required. An estimated eight months with approximately 60 workers would be required to expand the station.

1.2.6 Project-Wide Mitigation Measures

To address potential impacts of the Proposed Project to multiple resource areas as discussed above, the following project-wide mitigation measure would be applied:

> Three-Circuit Tower Mitigation (THREE-CIRCUIT) – A three-circuit lattice tower design would be implemented as described in Section 1.2.1 of this Technical Report, at the locations shown in Figure 1-7, Three-Circuit Tower Mitigation Map.
>
> Helicopter Mitigation (HELICOPTER) – Helicopter Mitigation shall be implemented, as described in Section 1.2.1 of this Technical Report, in steep areas of the Angeles National Forest where access is limited. For Alternatives 1 and 2a, implementation would occur at the locations shown on Figure 8-2, Identified Helicopter Mitigation Map. During final design of the Project, areas other than those shown on Figure 8-2, including Alternatives 2 and 3, may potentially require helicopter construction of the towers. This determination would generally be made where tower sites have no existing access roads within 300 feet and slopes are greater than 25 percent. Final identification of these tower sites would be determined and agreed upon by USFS, BLM and LADWP.

1.2.7 Construction Work Force and Schedule

The NEPA Record of Decision and CEQA Notice of Determination (anticipated in the early part of 2012) must be made before construction could begin. Therefore, construction of the BRRTP is anticipated to

begin no sooner than summer 2012, with a target in-service date of early 2015. These dates are subject to change based on actual completion of design.

The following construction estimates were based on preliminary engineering and the number of workers and construction duration values are estimates; therefore, they are subject to change based on final engineering and design. The new double-circuit 230 kV transmission line from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station would require 12.5 months and 134 workers. The installation of a 230 kV circuit on existing double-circuit towers from the Castaic Power Plant to the proposed Haskell Canyon Switching Station would require a month and a half and 35 workers. The upgrade and reconductoring of the existing BR-RIN would require eight months and 155 workers. The construction of a new 400-foot by 600-foot Haskell Canyon Switching Station would require 12 months and 60 workers. The expansion of the existing Barren Ridge Switching Station would require eight months and 60 workers.

The BRRTP components are anticipated to be constructed in the staggered sequence illustrated below in Tables 1-1 and 1-2. The construction of all Project components would take approximately two years and 447 total workers, with 173 workers at the peak of construction. Table 1-2 summarizes the BRRTP's anticipated construction workforce and schedule based on the most current information available. To allow for any delays in the Project, three weeks of float time were included for the new 230 kV transmission line and reconductoring efforts, and an additional two weeks of float time were included for the stringing of the second circuit between Castaic Power Plant and Haskell Canyon.

TABLE 1-1. ANTICIPATED CONSTRUCTION SEQUENCE

PROJECT COMPONENT	ANTICIPATED CONSTRUCTION SEQUENCE
Expansion of Barren Ridge Switching Station	Weeks 8 – 73
New Haskell Canyon Switching Station	Weeks 1 – 67
New 230 kV Transmission Line	Weeks 42 – 113
Reconductor BR-RIN	Weeks 55 – 88
Addition of 230 kV Circuit	Weeks 51 – 56

TABLE 1-2. CONSTRUCTION WORKFORCE AND SCHEDULE

PROJECT COMPONENT	CONSTRUCTION (START AND END WEEKS)	CONSTRUCTION DURATION (MONTHS)	TOTAL # OF WORKERS	PEAK # OF WORKERS AT ANY GIVEN TIME
Expansion of Barren Ridge Switching Station	8 – 73	15	60	38
New Haskell Canyon Switching Station	1 – 67	15.4	63	38
New 230 kV Transmission Line	42 – 113	16.5	134	131
Reconductor BR-RIN	55 -88	9	155	120
Addition of 230 kV Circuit	51 – 56	1.5	35	35
ALL COMPONENTS	**Weeks 1 – 113**	**26.1 months**	**447 Total Workers**	**173* Peak Workers**

*The value represents the total for the staggered construction of the Project components; it is not reflective of the sum of all the components.

2.0 REGULATORY FRAMEWORK

The Project must comply with various federal, state, and local laws. While some law and policy provide constraints, others provide intent and direction for certain actions to occur. The following is a general overview of such guidance which gives intent or direction for the proposed Project relevant to biological resources.

2.1 FEDERAL

Endangered Species Act of 1973; 16 USC § 1531 et seq.; 50 CFR Parts 17 and 222
This act includes provisions for protection and management of species that are federally listed as threatened or endangered or proposed for such listing and of designated critical habitat for these species. The administering agency for the above authority for non-marine species is the U.S. Fish and Wildlife Service (USFWS).

Migratory Bird Treaty Act: 16 USC § 703-711; 50 CFR Subchapter B
This act includes provisions for protection of migratory birds, including basic prohibitions against any taking not authorized by federal regulation. The administering agency for the above authority is the USFWS. The law contains no requirement to prove intent to violate any of its provisions. Wording in the MBTA makes it clear that most actions that result in "taking" or possession (permanent or temporary) of a protected species can be a violation of the act. The word "take" is defined as meaning "pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect (including nests, eggs, and feathers)." The provisions of the MBTA are nearly absolute; "except as permitted by regulations" is the only exception. Examples of permitted actions that do not violate the law are the possession of a hunting license to pursue specific game birds, legitimate research activities, display in zoological gardens, bird banding, and similar activities.

Bald and Golden Eagle Protection Act
Bald eagle protection began in 1940 with the passage of the Eagle Protection Act, which was later amended to include golden eagle and was renamed. The Bald and Golden Eagle Protection Act makes it unlawful to import, export, take, sell, purchase, or barter any bald eagle or golden eagle, their parts, products, nests, or eggs. Take includes pursuing, shooting, poisoning, wounding, killing, capturing, trapping, collecting, molesting, or disturbing. Exceptions may be granted by USFWS for scientific or exhibition use, or for traditional and cultural use by Native Americans. However, no permits may be issued for import, export, or commercial activities involving eagles.

Clean Water Act of 1977; 33 USC § 1251-1376; 30 CFR
The federal Clean Water Act (CWA) is an amendment to the Federal Water Pollution Control Act of 1972, which outlined the basic structure for regulating discharges of pollutants to waters of the United States. Several sections of this act pertain to regulating impacts to wetlands. The discharge of dredged or fill material into waters of the United States is subject to permitting under Section 404. Section 401 specifies additional requirements for permit review, particularly at the state level. The CWA is administered by the U.S. Environmental Protection Agency (EPA) and U.S. Army Corps of Engineers (USACE).

Clean Water Act of 1977; Section 401
CWA Section 401 gives individual states the authority to issue, waive, or deny certification that a proposed activity is in conformance with state water quality standards. Projects, including those that require permits from USACE under Section 404 are reviewed by the state's Regional Water Quality Control Boards (RWQCBs).

Clean Water Act of 1977; Section 404
USACE and EPA regulate the placement of fill and dredged materials into waters of the United States under CWA Section 404. Waters of the United States include lakes, rivers, streams, and their tributaries,

as well as wetlands. Tributary waters subject to USACE jurisdiction extend to the ordinary high water mark on opposing channel banks. Wetlands are defined for regulatory purposes as areas "inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Project proponents must obtain a permit from USACE for all discharges of dredged or fill material into waters of the United States, including wetlands, before proceeding with a proposed action. USACE may either issue individual permits on a case-by-case basis or general permits at a program level. General permits are pre-authorized and are issued to cover similar activities expected to cause only minimal adverse environmental effects. Nationwide permits (NWPs) are a type of general permit issued to cover particular fill activities. NWPs have a set of conditions that must be met for the permits to apply to a particular project and specific conditions that apply to each NWP.

Executive Order 11990, Protection of Wetlands (May 24, 1977)
This order provides for the protection of wetlands. The administering agency for the above authority is USACE. If wetland impacts cannot be avoided, then all practicable measures to minimize harm to those wetlands must be included and documented in the final environmental document for the proposed project.

Executive Order 13112, Invasive Species (February 3, 1999)
Executive Order 13112 calls on Executive Branch agencies to work prevent and control the introduction and spread of invasive species. Non-native flora and fauna can cause substantial change to ecosystems, upset the ecological balance, and have the potential to cause economic harm. Highway corridors provide opportunities for the movement of invasive species through the landscape.

National Forest Land Management Act
The National Forest Land Management Act (NFMA) is the primary statute governing the administration of national forests. The act requires the Secretary of Agriculture to asses forest lands, develop a management program based on multiple-use, sustained-yield principles, and implement a resource management plan for each unit of the National Forest System.

The U.S. Forest Service (USFS) recently revised the Southern California Forest Plan (Forest Plan) (USFS 2005), which includes four Southern California national forests: Los Padres, Angeles, San Bernardino, and Cleveland. The revised Forest Plan reflects strategies for addressing issues identified by the public and USFS staff. The USFS is required (under 36 CFR 219.10) to review all site-specific projects, including authorized uses of land, to ensure they are consistent with the 2005 Forest Plan, per the NFMA (16 U.S.C. 1600-1614, as amended). Specific standards applicable to this project include:

- **S5:** Treat all freshly cut live or recently dead conifer stumps with a registered fungicide to prevent the establishment of annosus root disease.

- **S6:** Seed to be used on National Forest System lands will be certified to be free of noxious weeds. Where available, only locally collected native seed will be used, or seeds will be used from species that are noninvasive and nonpersistent. When available, wattles, mulch and livestock feed to be used on National Forest System lands will be certified to be free of noxious weeds.

- **S11:** When occupied or suitable habitat for a threatened, endangered, proposed, candidate or sensitive (TEPCS) species is present on an ongoing or proposed project site, consider species guidance documents (see [LMP Part 3] Appendix H [pages 71 – 75]) to develop project-specific or activity-specific design criteria. This guidance is intended to provide a range of possible conservation measures that may be selectively applied during site-specific planning to avoid, minimize or mitigate negative long-term effects on threatened, endangered, proposed, candidate or sensitive species and habitat. Involve appropriate resource specialists in the identification of relevant design criteria. Include review of species guidance documents in fire suppression or other emergency actions when and to the extent practicable.

- **S12:** When implementing new projects in areas that provide habitat for threatened, endangered, proposed, and candidate species, use design criteria and conservation practices so that discretionary uses and facilities promote the conservation and recovery of these species and their habitats.

- **S13:** Manage Critical Biological land use zones so that activities and discretionary uses are either neutral or beneficial for the species and habitats for which the area was established. Accept short-term adverse impacts to threatened, endangered, and proposed species if such impacts will be compensated by the accrual of long-term benefits to habitat for threatened, endangered, and candidate species.

- **S15:** Within riparian conservation areas retain snags and downed logs unless they are identified as a threat to life, property, or sustainability of the riparian conservation area.

- **S17:** In areas outside of Wildland/Urban Interface Defense Zones and fuelbreaks, retain soft snags and acorn storage trees unless they are a safety hazard, fire threat, or impediment operability.

- **S18:** Protect known active and inactive raptor nest areas. Extent of protection will be based on proposed management activities, human activities existing at the onset of nesting initiation, species, topography, vegetative cover, and other factors. When appropriate, a no-disturbance buffer around active nest sites will be required from nest-site selection to fledging.

- **S19:** Protect all spotted owl territories identified in the Statewide California Department of Fish and Game database (numbered owl sites) and new sites that meet the state criteria by maintaining or enhancing habitat conditions over the long-term to the greatest extent practicable while protecting life and property. Use management guidelines in the species conservation strategy (or subsequent species guidance document; see [LMP Part 3] Appendix H [pages 71 – 75]) to further evaluate protection needs for projects, uses and activities.

- **S20**: Maintain a limited operating period (LOP) prohibiting activities within approximately .25 miles of a California spotted owl nest site, or activity center where nest site is unknown, during the breeding season (February 1 through August 15), unless surveys confirm that the owls are not nesting. Follow the USDA Forest Service (1993, 1994 or subsequent) protocol to determine whether owls are nesting. The LOP does not apply to existing road and trail use and maintenance, use of existing developed recreation sites, or existing special-uses, such as recreation residence tracts. When evaluating the need to implement a limited operating period, site- and project-specific factors need to be considered (use species management strategy or subsequent guidance; see [LMP Part 3] Appendix H [pages 71 – 75]).

- **S21:** California spotted owl habitat that is lost to development for a compelling reason should be mitigated up to a two-to-one basis considering quality of habitat lost, number of territories affected, reproductive history of pair(s) displaced, location, and related factors. Development includes ski area creation or expansion, new roads or trails, special-use sites and corridors, new recreation or administrative facilities, land exchanges, etc. Mitigation land should be sought first within the mountain range where the impacts occur; if this is not possible, mitigation land should be acquired within the San Gabriel or San Bernardino Mountains.

- **S22:** Except where it may adversely affect threatened and endangered species, linear structures such as fences, major highways, utility corridors, bridge upgrades or replacements, and canals will be designed and built to allow for fish and wildlife movement.

- **S24:** Mitigate impacts of on-going uses and management activities on threatened, endangered, proposed, and candidate species.

- **S25:** Conduct road and trail maintenance activities during the season of year that would have the least impact on threatened, endangered, and proposed wildlife species in occupied habitats, except as provided by site-specific consultation.

- **S27:** Use seasonal closures as specified by site-specific analysis to protect occupied bald eagle wintering, breeding, or nesting habitat.

- **S31:** Design new facilities or expansion of existing facilities to direct public use away from occupied habitat for threatened, endangered, proposed and candidate species.

- **S32:** When surveys for species presence/absence are done for threatened, endangered, and proposed species, use established survey protocols, where such protocols exist.

- **S33:** Manage Special Interest Areas so that activities and discretionary uses are either neutral or beneficial for the resource values for which the area was established. Accept short-term adverse impacts to these resource values if such impacts will be compensated by the accrual of long-term benefit.

- **S42:** Include provisions for raptor safety when issuing permits for new power lines and communication sites (see guidelines in Appendix G). Also implement these guidelines for existing permits within one year in identified high-use flyways of the California condor, and within five years in other high-use raptor flyways. Coordinate with California Department of Fish and Game, U.S. Fish & Wildlife Service, and power agencies to identify the high-use flyways.

- **S42:** Include provisions for raptor safety when issuing permits for the new power lines and communication sites. Also implement these guidelines for existing permits within one year in identified high-use flyways of the California condor, and within five years in other high-use raptor flyways. Coordinate with CDFG and USFWS, and power agencies to identify the high-use flyways.

- **S47:** When designing new projects in riparian areas, apply the Five-Step Project Screening Process for Riparian Conservation Areas as described in Appendix E- Five-Step Project Screening Process for Riparian Conservation Areas.

- **S59:** Manage eligible wild and scenic river segments to perpetuate their free-flowing condition and proposed classifications, and protect and enhance their outstanding remarkable values and water quality through the suitability study period and until designated or released from consideration. When management activities are proposed that may compromise the outstandingly remarkable value(s), potential classification, or free-flowing character of an eligible wild and scenic river segment, a suitability study will be completed for that eligible river segment prior to initiating activities.

Rivers and Harbors Act § 10; 33 USC § 201 et seq.
This act protects waters of the United States. The administering agency for the above authority is the USACE.

West Mojave Plan
The WMP (BLM 2005) Alternative A (the Preferred Plan) is a Habitat Conservation Plan, Federal Land Use Plan Amendment, and California Desert Conservation Area Amendment that provides a comprehensive strategy to conserve and protect the federally threatened Desert Tortoise and state threatened Mohave Ground Squirrel, plus about 100 other sensitive plants, animals, and biological

communities, including many federal and state-listed Endangered and Threatened Species. The WMP provides a vehicle for streamlining compliance with the California and Federal ESAs. The WMP was designated to allow Los Angeles and Kern counties and participating entities to better control local land-use decisions and maintain a strong economic climate in the region while addressing the requirements of the state and federal ESAs. Participants in the preparation of the WMP included the counties of Kern and Los Angeles, as well as numerous cities, such as Lancaster and Palmdale, that are proximal to the BRRTP. To date, only the participating federal agencies have formally adopted the WMP as it applies to federal lands.

2.2 STATE

California Endangered Species Act of 1984, California Fish and Game Code § 2050-2098
This act includes provisions for the protection and management of species listed by the state as endangered or threatened, or designated as candidates for such listings. This act includes a requirement for consultation "to ensure that any action authorized by a state lead agency is not likely to jeopardize the continued existence of any endangered or threatened species… or result in the destruction or adverse modification of habitat essential to the continued existence of the species" (§ 2090). Plants of California declared to be endangered, threatened, or rare are listed at 14 CCR §670.2. Animals of California declared to be endangered, threatened, or rare are listed at 14 CCR §670.5. The administering agency for the above authority is the California Department of Fish and Game (CDFG).

Native Plant Protection Act of 1977; California Fish and Game Code §1900 et seq.
This act prohibits importation of rare and endangered plants into California, take of rare and endangered plants, and sale of rare and endangered plants. The California Endangered Species Act (CESA) defers to the California Native Plant Protection Act (CNPPA), which ensures that state-listed plant species are protected when state agencies are involved in projects subject to CEQA. In this case, plants listed as rare under the CNPPA are not protected under CESA, but rather under CEQA.

California Species Preservation Act of 1978; California Fish and Game Code § 900-903
This act includes provisions for the protection and enhancement of the birds, mammals, fish, amphibians, and reptiles of California. The administering agency for the above authority is the CDFG.

California Fish and Game Code § 3511 and 5050
These code sections prohibit the taking or possessing of birds and reptiles listed as "fully protected." The administering agency for the above authority is the CDFG.

California Fish and Game Code § 1930-1933
These code sections provide for the Significant Natural Areas program and database. The administering agency for the above authority is the CDFG.

California Fish and Game Code §1600-1616 – Streambed Alteration Agreement
This code requires that any person, state or local government agency, or public utility notify CDFG and obtain a streambed alteration agreement before they begin any construction project that will divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake, use materials from a streambed, or result in the disposal or disposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake. In general, CDFG jurisdiction extends to the top of the stream or bank, or to the outer edge of riparian vegetation, whichever is wider.

California Environmental Quality Act (CEQA) PRC §2100 et seq.
This act provides for protection of the environment within the state of California. For the Project, the administering agency for the above authority is the Los Angeles Department of Water and Power.

Porter-Cologne Water Quality Control Act of 1975

The Porter-Cologne Water Quality Control Act provides state coordination with the CWA, which is described above. It provides a mechanism by which the RWQCBs certify federally-issued CWA permits to ensure the compatibility of federal and state water quality guidelines. The act provides for the development and periodic review of water quality control plans (basin plans) that designate beneficial uses of California's major rivers and groundwater basins and establish narrative and numerical water quality objectives for those waters. Basin plans are primarily implemented by using the National Pollution Discharge Elimination System permitting system to regulate waste discharges to ensure that water quality objectives are met.

California Desert Native Plants Act (California Food and Agriculture Code §80001-80006)
The California Desert Native Plants Act (CDNPA) allows removal of certain non-listed desert plants under permits issued by the county agriculture commissioner or sheriff.

2.3 LOCAL

Kern County General Plan (Adopted June 15, 2004)
The Kern County General Plan indicates that, through its goals, policies, and implementation, impacts on rare or endangered plants, wildlife, or habitat will be mitigated to a level below significance in compliance with state and federal laws. The Land Use/Conservation/Open Space Element requires that individual projects minimize or mitigate site-specific impacts on wildlife and botanical resources through the CEQA process. The General Plan also provides policies that protect oak woodlands and large oak trees.

Local Native Tree Protection Ordinances
California State Senate Concurrent Resolution 17 and several city and county ordinances regulate effects on native oak and riparian trees and woodlands, as well as designated landmark or heritage trees. These local ordinances generally require permits for any activities that directly remove covered trees of specific size and species, or indirectly affect them by work under or adjacent to their canopy driplines. The ordinances typically have specific quantitative mitigation rations for replacement of trees affected by projects.

The Los Angeles County Ordinance 153478 applies to all unincorporated areas of Los Angeles County. Under the county ordinance, a person shall not cut, destroy, remove, relocate, inflict damage, or encroach into the protected zone of oak trees of a certain size. The ordinance specifically prohibits the destruction of Valley oak (*Quercus lobata*) and California live oak (*Quercus agrifolia*) and any tree of the oak genus indigenous to California which measures eight inches or more in diameter four and one-half feet above the ground. It excludes scrub oaks (*Quercus berberidifolia*) and nursery grown oaks. The Department of Public Works, as the primary enforcement agency, has the authority to authorize relocation or removal under certain circumstances, such as public endangerment.

Los Angeles County General Plan
The Los Angeles County General Plan assists Los Angeles County officials in the decision-making process which affects growth and resources in unincorporated areas adjacent to the City's jurisdiction. The Conservation, Open Space, Recreation, and Ecological Resources goals of the Plan aim to preserve and protect prime agricultural lands, forest, fisheries, significant ecological areas, and other biotic resources through preservation, mitigation, and enhancement actions.

2.4 OVERVIEW OF SPECIAL HABITAT MANAGEMENT AREAS

The proposed Project is located near or crosses through a variety of federal, state, county, and other agency parks. The Regulatory section identifies regional and local plans, policies, and regulations applicable to the project. The following are brief discussions of the special habitat management areas with the potential to be affected by the project.

- Significant Ecological Areas

- USFWS Designated Critical Habitat
- Riparian Conservation Areas
- California Desert Conservation Area
- Antelope Valley California Poppy Reserve
- Arthur B Riley Desert Woodland State Park
- San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy

2.4.1 Los Angeles County Significant Ecological Areas

Significant Ecological Areas (SEAs) are ecologically important or fragile land and water areas, valuable as plant and animal communities. These areas are classified as one or more of the following: 1) habitats for rare and endangered species of plants and animals; 2) restricted natural communities–ecological areas which are scarce on a regional basis; 3) habitat restricted in distribution in the county; 4) breeding or nesting grounds; 5) unusual biotic communities; 6) sites with critical wildlife habitat and fish value; and 7) relatively undisturbed habitat.

The Los Angeles County Zoning Ordinance currently contains a procedure for reviewing development proposals that are located within or partially within an SEA. The intent of this procedure is not to preclude development, but to allow limited, controlled development that does not jeopardize the remaining biotic resources of SEAs. The procedure exempts certain developments from the SEA provisions but subjects other developments to a high degree of review through the Conditional Use Permit (CUP) process, including review by the Significant Ecological Area Technical Advisory Committee (SETAC), who advises the County Planning Commission during proposed planning phases on the sensitivity of the proposed project to the protected biological resources within the SEAs, and to proposed modifications that could compromise the integrity of SEAs.

Under the existing SEA regulatory procedure, public utilities are exempt from SEA regulations; they do not require an "SEA Clearance" because they are not subject to a building or grading permit and would not come under the scrutiny of zoning review. Listed below are the SEAs that have been identified within the project area and descriptions of the specific considerations for each individual SEA. Although the BRRTP is exempt from SEA regulations, the following guidelines listed for each will be taken into consideration by the Project applicant prior to beginning the Project design.

SEA - Joshua Tree Woodlands
Retain Joshua tree woodland, a rare community, with adequate buffers so as to allow for the long term viability and integration of the plant community as a whole.

SEA - San Andreas Rift Zone
Retain connectivity and linkage values between large open space units such as between the San Gabriel Mountains and Tehachapi Mountains and between the Fairmont and Antelope Buttes and Portal Ridge.

SEA - San Francisquito Canyon
This SEA was established to preserve habitat associated with the unarmored stickleback fish, an endangered species. Originally at 1,330 acres, the SEA has been reduced to less than 1,220 acres and is characterized as "severely degraded." A 1,220 acre buffer originally mapped around this SEA has been virtually eliminated by new residential and commercial developments in the canyon (Appendix A).

2.4.2 USFWS-Designated Critical Habitat

USFWS-Designated Critical Habitat is a specific geographic area(s) that is essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but that will be needed for its recovery. Critical habitat may be unoccupied for a number of reasons, including the extirpation of the species from this portion of the region. Critical habitat may be in areas unsuitable for the species, but may be restored to suitability with proper management. Some critical habitat may never be occupied by the species, but was designated or proposed because it is essential for conserving the species by maintaining factors constituting the species' habitat. USFWS-designated critical habitat has been identified within the Project area for the California red-legged frog (*Rana aurora draytonii*), California coastal gnatcatcher (*Polioptila californica californica*) and Arroyo toad (*Bufo californicus*).

2.4.3 Antelope Valley California Poppy Reserve

The Antelope Valley California Poppy State Reserve is state-protected reserve land located in the rural west side of the Antelope Valley in northern Los Angeles County. The Antelope Valley is located in the western Mojave Desert at an elevation ranging from 2600-3000 feet, making it a high desert environment. The reserve is administered by the California State Parks. The area is one of the state's most consistent poppy-bearing lands. California State Parks does not water or use any other means to stimulate the flowers; the land is preserved to only influences by the natural forces that had once influenced all of our surroundings.

2.4.4 Arthur B. Ripley Desert Woodland State Park

Added to the State Parks in 1988, Ripley Desert Woodland is located a few miles west of the Poppy Reserve on Lancaster Road at 210th Street West. The park protects and preserves an impressive stand of native Joshua trees and junipers which once grew in great abundance throughout the valley.

2.4.5 Mountain Recreation and Conservation Authority Property

The San Gabriel and Lower Los Angeles River and Mountains Conservancy (RMC) were created by the California legislature in 1999. The mission of the RMC is to preserve open space and habitat in order to provide for low-impact recreation and education uses, wildlife habitat restoration and protection, and watershed improvements within their jurisdiction. The RMC is administered by the Santa Monica Mountains Conservancy.

2.4.6 Riparian Conservation Area

On USFS-managed lands, when designing new projects within the riparian areas, a Five-Step Project Screening Process for Riparian Conservation Areas, as described in Appendix E of the Forest Service Land Management Plan (2005), must be applied. RCAs combine the ecologic concerns of riparian ecosystems with the hydrologic concerns of floodplains and streamside slopes. The goal of establishing an RCA is to protect, maintain, or improve water quality, site productivity, channel stability, riparian vegetation, and riparian-dependent species and habitats. If possible, construction must be excluded from these areas, which are delineated according to the following criteria:

- Within one mile of any known occurrence of threatened, endangered, proposed, candidate, and/or sensitive species;
- All 100-year recurrence interval floodplains;
- Within 328 feet (100 meters) of each edge of perennial streams and lakes or reservoirs;
- Within 98 feet (30 meters) of each edge of seasonally-flowing or intermittent streams.

The above criteria are flexible, and can be adjusted depending on site-specific information such as topography, species presence in adjacent drainages, or soil characteristics. Both aquatic and terrestrial ecosystems are considered when classifying RCAs because of the interaction of the two for species migration and travel. Suitable habitat may extend beyond the riparian zone where terrestrial ecosystems contribute to the overall functional habitat.

2.5 PERMITS REQUIRED AND PERMIT SCHEDULE

This section describes the required permits related to biological resource for the Project. The following table (Table 2) summarizes these required permits.

TABLE 2. PERMITS REQUIRED AND PERMIT SCHEDULE

Responsible Agency	Permit/Approval	Schedule
U.S. Fish and Wildlife Service	Federal ESA, Section 7 consultation for listed species	Additional survey work being conducted to identify the presence of species or habitat is present on-site
U.S. Army Corps of Engineers	Clean Water Act Section 404, Nationwide Permit (linear project)	6 to 8 months; not approved until Section 401 certification or waiver is received from RWQCB
California Department of Fish and Game	California ESA, California Fish and Game Code, Section 2081, authorization for take of listed species California Fish and Game Code, Section 1600, Streambed Alteration Agreement including offsite construction laydown area drainage	6 to 8 months
Regional Water Quality Control Board	Clean Water Act, Section 401 Water Quality Certification or waiver	Commensurate with CWA Section 404 process
U.S. Forest Service	Special Use Permit	USFS issues prior to construction authorization

3.0 INVENTORY METHODS

The evaluation of biological resources included a review of applicable documents and the identification of resources during several aerial, reconnaissance-level surveys and focused surveys conducted by qualified biologists. The details and methods used in this evaluation are presented below.

3.1 APPROACH TO DATA COLLECTION

The first step in the approach to data collection for this analysis was the identification and characterization of biological resources, including vegetation community types, riparian habitats, and special status plant and animal species that are known to occur or have potential to occur in the Project area. The Project area was defined as the area either directly or indirectly impacted by the BRRTP segments.

“Special status” as used in this section refers to species that are:

- Listed, proposed for listing, or candidates for listing as threatened or endangered under the Federal Endangered Species Act (FESA) (50 CFR 17.12 [listed plants], 50 CFR 17.11 [listed animals], 67 FR 40657 [candidate species], and various notices in the Federal Register [FR] [proposed species]);
- Listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (CESA) (CDFG 2009a);
- Identified by the California Department of Fish and Game (CDFG) as species of concern or fully protected species, including fish and wildlife that do not have state or federal threatened or endangered status but may still be threatened with extinction (CDFG 2009a);
- California Species of Special Concern (CSC), vertebrate species that have been designated as “species of special concern” by the CDFG because declining population levels, limited range, and/or continuing threats have made them vulnerable to extinction (CDFG 2009a);
- Listed by the Bureau of Land Management (BLM) as sensitive (BLM 2007);
- Included in the California Native Plant Society (CNPS) compilation (List 1 or 2) (CNPS 2001, 2008);
- Otherwise defined as rare, threatened, or endangered under the California Environmental Quality Act;
- Listed by the Angeles National Forest as, sensitive plant and wildlife species (for Angeles National Forest lands only);
- Listed by the Angeles National Forest as management indicator species (MIS).

In addition to federally protected wildlife species, there are several other special-status species with the potential to occur in the general Project area. USFS has designated these species as sensitive species, management indicator species (MIS), or both. Sensitive species are administratively designated by the Regional Forester (Forest Service Manual [FSM] 2670.5) and managed under the authority of the National Forest Management Act (NFMA). Sensitive species are those species whose populations on the Forest are considered at risk for a variety of reasons. USFS managers are required to maintain suitable habitat for viable populations of native and desired non-native species to avoid actions that may cause a species to become threatened or endangered. A viable population is defined as a population that has sufficient numbers and distribution of reproductively active individuals that allow for a self-sustaining population.

Only CNPS Lists 1 and 2 are considered to be "special status" species because of their higher sensitivity to impacts. CNPS List 3 and List 4 species are of lower sensitivity; the mitigation for impacts to sensitive vegetation communities would provide compensation for impacts to these species, so no additional mitigation for impacts to them would be required. However, Forest Service Sensitive Plant species, regardless of their CNPS listing, do require specific mitigation measures.

The biological reconnaissance survey area consisted of a one-mile corridor centered on the proposed centerline. The study corridors for the protocol surveys were 150 meters (500 feet) wide (250 feet on each side of the transmission line centerline). Some areas outside the survey corridor, such as access roads, were also mapped and surveyed for wildlife and plant species.

Prior to conducting fieldwork, records of known occurrences were reviewed to identify special status species that may occur in the Project area. Those records were then compared with lists of federal- or state-listed threatened, endangered, or other special-status species. Details of all survey work and approaches to collecting data are described below.

3.2 LITERATURE REVIEW

Preliminary investigation included review of information obtained from the USFWS, USFS, CDFG, BLM, literature searches, examinations of aerial photographs, and database searches including CNPS, California Natural Diversity Data Base (CNDDB) records, and other sensitive species accounts for Los Angeles and Kern Counties. Regional resource planning documents prepared by federal, state and local agencies were also reviewed, including the West Mojave Plan, Kern County General Plan, LA County General Plan, USFWS Recovery Plans for the arroyo toad (*Bufo californicus),* least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), California red-legged frog (*Rana aurora draytonii*), desert tortoise (*Gopherus agassizii*), and California condor (*Gymnogyps californianus*), and USFS management plans for Forest Service special status plant species.

To identify the existing and potential biological resources present in the vicinity of the proposed Project, a Geographic Information System (GIS) search was performed. This consisted of mapping baseline biological resource data (vegetation mapping, CNDDB records, USFS National Resource Information System (NRIS) database, habitat conservation areas, water resources, and potential jurisdictional areas). The following US Geological Survey quadrangles were reviewed: Agua Dulce, Black Mountain, Cache Peak, Del Sur, Fairmont Butte, Green Valley, Lake Hughes, La Liebre Ranch, Lebec, Liebre Mountain, Little Buttes, Mint Canyon, Mojave, Mojave NE, Monolith, Neenach School, Newhall, Ritter Ridge, San Fernando, Sleepy Valley, Soledad Mountain, Tylerhorse Canyon, Warm Springs Mountain, Whitaker Peak, and Willow Springs.

Other references used included the soil data from US Department of Agriculture, Jepson Manual, the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants of California, and several other published and technical references for the region. Once the proposed Project and segments were identified, a habitat assessment was conducted in the spring and summer of 2008. These surveys were habitat-based, using analysis of vegetative cover types observed along the corridors as well as known habitat requirements and historic range of the species.

3.3 BIOLOGICAL RECONNAISSANCE SURVEYS

During the development of alternative corridors for the proposed Project, reconnaissance surveys were conducted on every segment. The surveys consisted of a reconnaissance-level survey conducted aerially from a helicopter or from the ground within a 0.5 mile wide corridor buffer of the proposed transmission line corridor where access was available.

Vegetation community mapping was conducted using the California GAP-Analysis Program (GAP), 2005 aerial imaging from the NAIP California spatial library, CNDDB data. USFS GIS habitat data were used as the basis for the habitat-based assessment of the Project study corridors. GIS data layers were mapped within the study corridors (one mile wide biology study corridor) and plotted. The vegetation mapping was conducted using the GAP data but later refined based on field reconnaissance surveys.

Nomenclature used in this report conforms to Hickman (1993) for plants. Plant community names conform to Holland (1986) and Sawyer and Keeler-Wolf (1995); wetland community names conforming to Cowardin, *et. al.* (1979) are also given, where appropriate.

Species-habitat correlations assume the occurrence of an organism with a series of environmental variables. Environmental variables can describe the habitat components organisms are dependent upon and, therefore, predict their pattern of habitat occupancy. Therefore, a habitat-based survey approach was used to assess all the segment corridors equally.

The field survey evaluated the quality of the habitat for each species and/or proximity of the habitat to a known occurrence of a species. Information used to determine known occurrence locations included CNDDB data, USFS data (for the Angeles National Forest), CNPS records, consultation with Wildlife Agencies, and reference to published species accounts. Field survey activities included documenting plant and animal species or sign observed within the study corridor, mapping vegetation communities, and photo-documenting existing biological conditions for all identified potential Project routes. The potential for occurrence of special status species not observed during field investigations was assessed based upon evaluation of species distribution and habitat use and information from previous research studies and biological reports.

Habitats for special status species of plants and animals were classified as "absent," "unlikely," "possible," "likely," or "present." Refer to Tables 5 and 6 for a list of these classifications. These classifications were derived from an evaluation of the ability of key habitat components to supply the life requisites on selected species of fish and wildlife (USFWS 1980). Evaluation involves using the same key habitat components to compare existing habitat conditions and optimum habitat conditions for the species of interest. Optimum conditions are those associated with the highest potential densities of the species within a defined area.

> **Absent:** Species or sign not observed on the site, outside of the known range, and conditions unsuitable for occurrence.
> **Unlikely:** Species or sign not observed on the site, but conditions marginal for occurrence.
> **Possible:** Species or sign not observed on the site, but conditions suitable for occurrence and/or an historical record exists in the vicinity.
> **Likely:** Species or sign not observed on the site, but reasonably certain to occur on the site based on conditions, species ranges, and recent records.
> **Present:** Species or sign of their presence recently observed on the site.

Seventeen plant communities (after Holland 1986) are traversed by the transmission line alignments and shown in Table 3 below. The "California annual grassland" community is not specifically listed in Holland, but is the current name for Holland's type called non-native Grassland (Holland 1986). The classification "disturbed/developed" is not listed by Holland because it is not a vegetation community. Total acreage is calculated based on a 500-foot corridor on either side of the proposed centerline.

TABLE 3. EXISTING VEGETATION COMMUNITIES WITHIN THE PROJECT AREA

Segment	Vegetation Community	Total Acreage of Segment*	Percentage of Total Acreage of Segment	Percentage of Total Acreage of Alternative
Alternative 1				
A	Joshua Tree Woodland	52.39	6.50	1.04
A	Mojave Creosote Bush Scrub	675.88	83.88	13.42
A	Mojave Wash Scrub	77.50	9.62	1.54
C	Joshua Tree Woodland	152.67	11.62	3.03
C	Mojave Creosote Bush Scrub	1134.41	86.33	22.52
C	Mojave Wash Scrub	0.05	< 0.01	0.00
C	Rabbitbrush Scrub	26.85	2.04	0.53
D	Agricultural Land	31.72	1.09	0.63
D	California Annual Grassland	644.65	22.10	12.80
D	Chamise Chaparral	655.56	22.47	13.01
D	Disturbed/developed	31.57	1.08	0.63
D	Joshua Tree Woodland	129.16	4.43	2.56
D	Mojave Creosote Bush Scrub	261.31	8.96	5.19
D	Rabbitbrush Scrub	120.68	4.14	2.40
D	Riversidian Sage Scrub	447.95	15.36	8.89
D	Scrub Oak Chaparral	1.32	0.05	0.03
D	Southern Coast Live Oak Riparian Forest	6.67	0.23	0.13
D	Southern Cottonwood Willow Riparian Forest	8.04	0.28	0.16
D	Southern Mixed Chaparral	534.95	18.34	10.62
D	Southern Sycamore Alder Riparian Woodland	5.83	0.20	0.12
D	Southern Willow Scrub	12.91	0.44	0.26
D	Valley Oak Woodland	24.80	0.85	0.49
Alternative 2				
A	Joshua Tree Woodland	52.39	6.50	1.42
A	Mojave Creosote Bush Scrub	675.88	83.88	18.35
A	Mojave Wash Scrub	77.50	9.62	2.10
B	Agricultural Land	504.27	31.29	13.69
B	California Annual Grassland	123.25	7.65	3.35
B	Joshua Tree Woodland	267.93	16.63	7.27
B	Mojave Creosote Bush Scrub	715.96	44.43	19.44
G	Agricultural Land	231.07	18.19	6.27
G	California Annual Grassland	104.12	8.20	2.83
G	Chamise Chaparral	344.44	27.12	9.35
G	Disturbed/developed	329.58	25.95	8.95
G	Riversidian Sage Scrub	91.50	7.20	2.48
G	Southern Coast Live Oak Riparian Forest	20.33	1.60	0.55
G	Southern Mixed Chaparral	121.16	9.54	3.29
G	Southern Riparian Scrub	6.19	0.49	0.17
G	Southern Sycamore Alder Riparian Woodland	21.76	1.71	0.59
Alternative 2a				
A	Joshua Tree Woodland	52.39	6.50	1.38
A	Mojave Creosote Bush Scrub	675.88	83.88	17.83
A	Mojave Wash Scrub	77.50	9.62	2.04
B	Agricultural Land	504.27	31.29	13.30
B	California Annual Grassland	123.25	7.65	3.25

Segment	Vegetation Community	Total Acreage of Segment*	Percentage of Total Acreage of Segment	Percentage of Total Acreage of Alternative
B	Joshua Tree Woodland	267.93	16.63	7.07
B	Mojave Creosote Bush Scrub	715.96	44.43	18.89
G	Agricultural Land	231.07	23.60	6.10
G	California Annual Grassland	104.12	10.63	2.75
G	Chamise Chaparral	344.44	35.17	9.09
G	Disturbed/developed	74.82	7.64	1.97
G	Riversidian Sage Scrub	91.50	9.34	2.41
G	Southern Coast Live Oak Riparian Forest	20.33	2.08	0.54
G	Southern Mixed Chaparral	91.35	9.33	2.41
G	Southern Riparian Scrub	6.19	0.63	0.16
G	Southern Sycamore Alder Riparian Woodland	15.45	1.58	0.41
2a	Disturbed/developed	104.14	26.10	2.75
2a	Interior Live Oak Chaparral	53.92	13.51	1.42
2a	Scrub Oak Chaparral	30.05	7.53	0.79
2a	Southern Mixed Chaparral	210.91	52.86	5.56
Alternative 3				
A	Joshua Tree Woodland	52.39	6.50	1.14
A	Mojave Creosote Bush Scrub	675.88	83.88	14.77
A	Mojave Wash Scrub	77.50	9.62	1.69
B	Agricultural Land	504.27	31.29	11.02
B	California Annual Grassland	123.25	7.65	2.69
B	Joshua Tree Woodland	267.93	16.63	5.86
B	Mojave Creosote Bush Scrub	715.96	44.43	15.65
F1	Agricultural Land	50.60		1.11
F2	Agricultural Land	60.65		1.33
F2	California Annual Grassland	106.97		2.34
I	California Annual Grassland	310.89	15.97	6.79
I	Chamise Chaparral	106.89	5.49	2.34
I	Disturbed/developed	192.17	9.87	4.20
I	Riversidian Sage Scrub	770.37	39.56	16.84
I	Scrub Oak Chaparral	308.85	15.86	6.75
I	Southern Mixed Chaparral	181.54	9.32	3.97
I	Southern Riparian Scrub	59.19	3.04	1.29
I	Southern Sycamore Alder Riparian Woodland	17.40	0.89	0.38
Reconductoring				
Reconductoring Segment ABG	Agricultural Land	736.94	20.02	15.95
Reconductoring Segment ABG	California Annual Grassland	226.28	6.15	4.90
Reconductoring Segment ABG	Chamise Chaparral	304.26	8.27	6.59
Reconductoring Segment ABG	Disturbed/developed	333.52	9.06	7.22
Reconductoring Segment ABG	Joshua Tree Woodland	319.89	8.69	6.92
Reconductoring Segment ABG	Mojave Creosote Bush Scrub	1382.74	37.57	29.93
Reconductoring Segment ABG	Mojave Wash Scrub	77.35	2.10	1.67
Reconductoring Segment ABG	Riversidian Sage Scrub	92.21	2.51	2.00
Reconductoring Segment ABG	Sandy Area Other than Beaches	2.30	0.06	0.05
Reconductoring Segment ABG	Southern Coast Live Oak Riparian Forest	61.53	1.67	1.33
Reconductoring Segment ABG	Southern Mixed Chaparral	114.20	3.10	2.47
Reconductoring Segment ABG	Southern Riparian Scrub	6.17	0.17	0.13
Reconductoring Segment ABG	Southern Sycamore Alder Riparian Woodland	22.73	0.62	0.49

Segment	Vegetation Community	Total Acreage of Segment*	Percentage of Total Acreage of Segment	Percentage of Total Acreage of Alternative
K	Chamise Chaparral	73.31	7.80	1.59
K	Disturbed/developed	400.77	42.66	8.68
K	Riversidian Sage Scrub	129.39	13.77	2.80
K	Sandy Area Other than Beaches	12.07	1.28	0.26
K	Southern Coast Live Oak Riparian Forest	22.54	2.40	0.49
K	Southern Mixed Chaparral	237.84	25.32	5.15
K	Southern Riparian Scrub	48.38	5.15	1.05
K	Southern Sycamore Alder Riparian Woodland	6.06	0.65	0.13
K	Southern Willow Scrub	9.10	0.97	0.20
New Circuit				
J	Chamise Chaparral	342.42	46.93	46.93
J	Disturbed/developed	11.04	1.51	1.51
J	Riversidian Sage Scrub	358.05	49.07	49.07
J	Southern Coast Live Oak Riparian Forest	6.79	0.93	0.93
J	Southern Cottonwood Willow Riparian Forest	7.79	1.07	1.07
J	Southern Sycamore Alder Riparian Woodland	3.59	0.49	0.49
Segments Considered and Removed from Analysis				
E	Agricultural Land	390.37	57.11	57.11
E	California Annual Grassland	138.9	20.32	20.32
E	Joshua Tree Woodland	39.89	5.84	5.84
E	Mojave Creosote Bush Scrub	114.33	16.73	16.73
115	Agricultural Land	143.52	49.35	49.35
115	California Annual Grassland	119.24	41.00	41.00
115	Riversidian Sage Scrub	28.08	9.65	9.65
H1	California Annual Grassland	159.16		
H1	Riversidian Sage Scrub	4.74		
H2	Agricultural Land	55.44		
H2	Chamise Chaparral	568.39		
H2	Riversidian Sage Scrub	76.69		
H2	Scrub Oak Chaparral	18.33		
H2	Southern Mixed Chaparral	315.12		

*Acreage of segments was calculated within 500 feet or each side of the centerline.

3.4 PROTOCOL SURVEYS

Information gathered from the literature review and reconnaissance-level field surveys were used to identify habitat for all threatened and endangered plant and wildlife species with potential to occur within the project area. Protocol surveys were conducted in the spring and summer of 2008, 2009, and 2010 on all segments to assess the presence of special-status plant and wildlife species.

The study corridors for the surveys were 150-meters (500 feet) wide (250 feet on each side of centerline). Amphibian species and their potential habitat were surveyed up to 5 miles from the centerline to describe the potential of indirect impacts from construction activities. The amphibian site assessment forms were submitted to USFWS and USFS to review. Based on the site assessment forms and agency feedback surveys were conducted.

Prior to conducting field surveys, USFS, USFWS and BLM were consulted to determine survey needs and appropriate survey time frames. Protocol surveys were conducted for the arroyo toad and California red-legged frog, federal and state listed plant species, Forest Service Sensitive/Watch plant species and CNPS List 1 and 2 species. Surveys were also conducted to determine presence of and suitable habitat for California spotted owl, Joshua trees, special-status bat species, and special-status riparian bird species. Additionally, desert habitat and invasive weed surveys were conducted, along with an avian risk assessment. (See Appendices E-N for Survey Reports)

Table 4 identifies the species for which protocol-level surveys were conducted for the proposed Project and segments. Table 4 also identifies the appropriate timeframes for protocol surveys as specified by managing entities and includes the location by segment or alternative for each. Appendices E-N include the focused survey reports.

3.4.1 Special-Status Amphibian Surveys

In preparation for surveys for special-status amphibians, current maps of alternative transmission segments for the Project were developed and CNDDB records downloaded for locations of special-status amphibians and critical habitat. Areas along the segments were visited in April and early May 2008 to assess areas to survey. More areas were surveyed in late May and June 2008 as proposed segment corridors moved, or areas were found by other biologists (such as botanists) that suggested possible amphibian habitat due to the presence of ponded water and tadpoles. Protocol surveys were initiated in 2008 and continued in 2009 for the California red-legged frog and the arroyo toad.

Many of the transmission corridors are on high, dry, rugged ridges, and most of the amphibian habitat in the ANF Mountains occurs on canyon bottoms in creeks and unnamed tributaries. Concern has been expressed by the ANF about indirect impacts to sensitive-species amphibians, including disturbance such as sediment runoff flowing downhill from transmission line construction activity into drainages below. This concern was taken into account when assessing possible impacts of transmission line construction on the amphibian species of concern.

For the arroyo toad, the protocol states that areas within one kilometer of known arroyo toad sites shall be considered occupied. Thus, overall, one mile from the proposed segment was considered when searching for potential special-status amphibian species habitat. Further, potential impacts of transmission line construction, including tower assembly and installation or replacements, were taken into account in relation to the rugged topography of the mountains. When stream habitat was near or directly downslope from the proposed transmission line segments, sites were assessed for potential impact to sensitive-species amphibians. When a stream was within one mile of a transmission segment, but separated by several drainages and ridges, it was not considered as an area where indirect impacts were probable or possible.

The California red-legged frog protocol calls for eight surveys: six nocturnal and two diurnal. At least two of the surveys (one diurnal and one nocturnal) must be completed during the non-breeding season from July 1 to September 30. The other surveys must be completed during the breeding season from January 1 to June 30 (USFWS 2005). The arroyo toad protocol calls for six surveys, each consisting of a diurnal and nocturnal portion, conducted during the breeding season from March 15 to June 30 (USFWS 1999).

3.4.2 Special-Status Plant Surveys

Botanical surveys were conducted in 2008, 2009 and 2010. The surveys were floristic, meaning that all plants observed were identified to the taxonomic level needed to determine whether they were special-status plant species. Exceptions to this included instances where characteristics essential for identification were not present during the field survey period. Botanists identified all plant species detected during field surveys using personal knowledge of the plants and keys in *The Jepson Manual* (Hickman 1993). Scientific nomenclature in this report mainly follows Hickman (1993). Common names are derived from Hickman (1993) and CalFlora (2008). The survey methodology generally followed the U.S. Fish and Wildlife Service's (USFWS) *Guidelines for Conducting and Reporting Botanical Inventories for*

Federally Listed, Proposed and Candidate Plants (USFWS 1996a), and the recommended botanical survey guidelines of the California Department of Fish and Game (CDFG 2000) and the California Native Plant Society (CNPS 2001). Areas with dense, impenetrable chaparral, and areas with very steep slopes that posed a safety hazard to surveyors, were not surveyed. Within the surveyed segments, botanists used an intuitive approach to determine the route taken during meandering transects. The intuitive approach, recommended by USFS Botanist Katie VinZant, uses the botanist's knowledge of the preferred habitat of special-status plants to focus the survey effort on sites most likely to support them.

The 2009 surveys covered both the proposed access roads and 500-ft survey corridor in the section of the redesigned alignment that were not surveyed in 2008. All access roads were limited to a 20 foot buffer zone on either side of the proposed route, including the spur roads to existing transmission lines.

The botanical surveys were performed during the time of year that most species would be detectable on both USFS land and BLM managed land. Segment A, D, G, I, J and H were surveyed for special status plant species along a 500 foot corridor. Private property was not surveyed. Additional data was also gathered from USFS botanists and data from the Antelope Pardee project that overlapped with BRRTP area. Many large areas surveyed in 2008 burned in 2007 or within the last five years, and abundant and diverse displays of annual and perennial herbs were observed in these areas. However, it is possible that the plant species diversity and density observed during the 2008 and 2009 surveys in the unburned portions of the project area were lower than what would be seen in an optimal year.

Botanists recorded species observations with Trimble GEO-XT hand-held Global Positioning System (GPS) units using Terrasync software. These units were pre-loaded with maps of the proposed transmission line corridors, buffers, and USGS topographic maps as background files. GPS units were used for navigation, and to collect locational data (points and polygons) when special-status plant species were found.

3.4.3 Spotted Owl Focused Surveys

The California spotted owl survey followed the revised USFS methodology outlined in the 1993 Protocol for Surveying for Spotted Owls in Proposed Management Activities Areas and Habitat Conservation Areas (USFS 1993). The protocol prescribes surveys be conducted from March 1 to August 31 and that a total of six surveys be conducted per survey area, either by conducting all six surveys in one year or conducting three surveys per year over a two-year period.

Surveys were conducted from 2008-2010 between sunset and sunrise to maximize the potential for detection. These surveys are being conducted using the spot calling method, where calling stations are established every ¼- to ½-mile along potential habitat identified during the 2008 habitat assessment. The spot calling method involves setting up call stations every quarter- to half-mile along potential habitat identified during the habitat assessment. Call stations were grouped into survey routes by proximity and Project segment. Each survey route was surveyed in a single survey outing. Call stations were placed at "outstanding" physiographic features such as prominent ridge points, saddles, and openings in the vegetation to ensure complete coverage of the survey area (USFS 1993). To ensure each survey was conducted at the same locations during each survey, a flag was placed at each call station and a GPS point was taken using a Garmin GPS unit. Each call station was surveyed for at least ten minutes per visit. The order in which each call station was surveyed was varied to reduce bias.

A total of 41 call stations were established along Segment G, at San Francisquito Canyon, Baird Canyon, Clearwater Canyon, Pettinger Canyon, Drinkwater Canyon, Spunky Canyon, South Portal Canyon, Craig Spring, and Grass Mountain. A total of 19 call stations were established along Segment H along Bouquet Canyon, Bouquet Reservoir and Artesian Spring. Because no potential habitat was identified during the habitat assessment, no call stations were established for Segment I. A total of three call stations were established along segment J at Dry Canyon. A total of nine call stations were established on Segment D at Fisher Spring, Oak Flat Spring, and Liebre Gulch.

3.4.4 Joshua Tree Surveys

Pedestrian field surveys were conducted in habitat suitable for Joshua trees (See Appendix H). Areas of low quality Joshua tree habitat (agricultural lands or otherwise developed or disturbed areas) were visually surveyed with the naked eye or with the aid of binoculars to ensure patches of Joshua trees were not overlooked. Pedestrian surveys were conducted with biologists walking meandering transects within the 500-foot survey corridor. Most of the survey corridors shared space with either transmission lines or aqueduct(s) and their associated maintenance roadways. When areas contained these structures, particular attention was given to any remaining undisturbed habitat pockets, with the assumption that undisturbed areas provide higher quality habitat than those altered by anthropogenic activity. In these undisturbed areas, biologists walked an average of 100 feet apart from each other. The locations of Joshua trees were recorded using a hand-held GPS unit when trees occurred in high densities. When Joshua trees were found as individuals in low densities, trees were counted. The entire lengths of Segments A, B, C, E, F and portions of D, G, H and I were surveyed (See Appendix H).

Joshua tree densities per segment were calculated using the Environmental Systems Research Institute's (ESRI) ArcMap 9.2. A 500-foot survey corridor was initially created, which originated at the right-of-way's centerline. This corridor was then split into 1/10 mile sections and the acreage for each section was calculated using Geographic Information System (GIS). Density was calculated after adding Joshua tree GPS points and counts to their appropriate sections and dividing by acreage. Density categories were created for mapping purposes. Joshua tree density may be underestimated due to the inability to complete a 100% survey of all segments.

3.4.5 Bat Surveys

Surveys were conducted for bat habitat and species within the BRRTP project area during August 2008. Diurnal surveys were conducted to identify suitable roosting and foraging habitat in or near project segments, while dusk surveys were conducted to observe bat activity at locations determined based on diurnal surveys. Dusk surveys only occurred within the ANF on Segments G, H, and I. Acoustical monitoring of echolocation search and feeding calls were made with a Pettersson D240X Ultrasonic Detector; results were recorded on data sheets measured at fifteen-minute intervals. No invasive techniques were employed during surveys, and all surveys were limited to habitat inspections and visual and acoustical observations of active bats.

3.4.6 Desert Habitat Assessment

As part of efforts to determine potential habitat usage of the Project area by desert tortoise, Mojave ground squirrel, kit fox and burrowing owl, biologists recorded data on disturbance quality and quantity and vegetation composition while walking meandering transects within the survey corridors, including Segments A, B, C, D, E, F1, F2, H1, 115th and the desert portion of I. Species presence as detected by direct observation of animals, burrows, calls, tracks, scat, or other sign were also noted and their locations recorded using GPS. The majority of the surveys were conducted on foot; however, when disturbance was high, or development was present, vehicles were used in order to maximize efficiency. Areas that were marked as private property or in which access could not be safely obtained were not surveyed.

3.4.7 Avian Habitat Assessment

Surveys were conducted on ANF in June and August 2008 to evaluate suitable habitat for special-status bird species, including southwestern willow flycatcher, least Bell's vireo, western yellow-billed cuckoo, and coastal California gnatcatcher (See Appendix K). Pre-field work included reviewing aerial photographs of the ANF and searching for existing recorded occurrences. Surveys occurred on Segments D, G, H, I, and J within 500-foot corridors. Potential habitat was defined as habitat that can support both breeding and foraging needs of the species. Both pedestrian and vehicular surveys were conducted as situations dictated. Particular attention was given to areas with previous records of special-status bird species and to riparian and coastal sage scrub habitats. Habitat was recorded with datasheets, photos, and GPS points that were subsequently incorporated into a GIS database.

3.4.8 Invasive Weed Species Surveys

Invasive species surveys were conducted concurrently with the protocol-level special status plant surveys. Locations were recorded using Trimble GEO-XT hand-held GPS units using TerraSync software. Species were mapped as either points or polygons depending on the size of the population.

Within the ANF, mapping included areas adjacent to corridor access roads. In some instances, the ANF botanist had previously mapped or noted invasive species along the access roads. This information is included in the survey report (see Appendices)

3.4.9 Avian Risk Assessment

An avian risk assessment was conducted following guidelines provided by the Avian Power Line Interaction Committee (APLIC). The risk assessment determined areas of greatest risk to birds and measures to avoid and mitigate avian risk. Areas identified as potential risks were evaluated in the field and documented using a GPS unit. This information was mapped and provided to the engineering design team to prioritize tower locations. In addition, power line design and avian safety education was provided to the design team.

Before conducting the avian risk assessment surveys, pre-survey research was conducted to determine avian species that have the potential to occur within the Project area. This list of potentially occurring species was compiled using the species lists from local chapters of the Audubon Society in Kern and Los Angeles Counties (Blue and Moore 1998), Edwards Air Force Base (Department of Defense), and the Angeles National Forest (Garrett and Alcala 2008). The list included year-round residents, migratory species breeding or wintering in the area, and transitory migrants with a more vagrant occurrence in the Project area (Appendix B). Existing LADWP survey information was also used to document locations where avian nesting or presence had been previously observed (LSA 2007a, LSA 2007b, LSA 2007c). For each potentially occurring species, information was compiled on the distribution, habitat preference, and any known sighting(s). In addition, seasonal wind patterns (Fisk 2007) and topographic data were overlaid to identify potential flyways in the entire Project area.

Surveys occurred during the spring and fall of 2008 (June 9 – 13 and September 22 – 26). Spring surveys were conducted to characterize habitat and document species occurrence and nesting activity across the entire project area. Datapoints were taken approximately every mile, or at smaller intervals when notable changes were observed (i.e., topography, vegetation community, bird and/or nest presence). After assessing spring survey data and additional data, such as typical wind currents throughout the project area, areas of higher risk were determined. Fall surveys were conducted to refine data on high-risk locations and continue gathering activity data across the project area. Morning surveys generally consisted of surveying large water bodies within the corridors to gather information on waterfowl presence and activity, while afternoon surveys consisted of gathering data along the remaining, linear portions of the segments.

Post-survey analysis of field data consisted of applying a series of avian-risk factors to the project segments. These factors were split into two categories: collision factors which increase the risk of collision (i.e., topography, wind direction, and transmission line placement) and ecological resource enhancements which tend to concentrate avians into certain areas (i.e., nearby water, canyons and valleys). Each factor was then applied to each one-mile interval of all segments using GIS and field data to determine how many total risk factors were present along any given area of the project.

3.4.10 Riparian Conservation Area (RCA) Surveys

For this Project, it was necessary to identify and map areas on NFS lands which would be considered Riparian Conservation Areas (RCAs). RCAs combine the ecologic concerns of riparian ecosystems with the hydrologic concerns of floodplains and streamside slopes. The goal of establishing an RCA is to protect, maintain, or improve water quality, site productivity, channel stability, riparian vegetation, and riparian-dependent species and habitats. Activities proposed within RCAs must have a neutral or beneficial impact on RCAs or a Forest Plan amendment is required. If possible, construction must be excluded from these areas, which are delineated according to the following criteria:

- Within one mile of any known occurrence of threatened, endangered, proposed, candidate, and/or sensitive species;
- All 100-year recurrence interval floodplains;
- Within 328 feet (100 meters) of each edge of perennial streams and lakes or reservoirs;
- Within 98 feet (30 meters) of each edge of seasonally-flowing or intermittent streams.

The above criteria are flexible, and can be adjusted depending on site-specific information such as topography, species presence in adjacent drainages, or soil characteristics. Both aquatic and terrestrial ecosystems are considered when classifying RCAs because of the interaction of the two for species migration and travel. Suitable habitat may extend beyond the riparian zone where terrestrial ecosystems contribute to the overall functional habitat.

RCAs combine the ecological concerns of riparian ecosystems with the hydrologic concerns of floodplains and streamside slopes. The goal of establishing an RCA is to protect, maintain, or improve water quality, site productivity, channel stability, riparian vegetation, and riparian-dependent species and habitats. The survey methods for this study were based on USFS ANF methodology for assessing RCAs and included application of the USDA Forest Service Five-Step Project Screening Process for Riparian Conservation Areas. Following USFS guidelines a GIS analysis was used to identify and delineate RCA locations for all BRRTP Segments that crossed the ANF. GIS methods were used in order to map regions according to the above criteria. In addition, access roads with the potential to be utilized during construction were placed on the map that crossed RCAs. Access roads that are to be widened in sections and in areas near or within RCAs would require a plan amendment. Buffers were applied around each RCA according to the Five-Step Screening Process for RCAs. RCA surveys were then conducted in March, May, and June of 2009 and May of 2010. Several areas were more closely reviewed due to concerns regarding riparian areas and small streams that were not indicated on USGS maps. Each RCA were documented with global positioning system (GPS) points, photographs, and data recorded on the RCA site assessment forms.

3.5 SURVEY LIMITATIONS

The accuracy of the various surveys being conducted for this Project is limited by the following factors:

Survey areas did not always include all of the proposed impacts areas (e.g., access roads spur roads, pull sites, and staging areas that occur outside the 500-foot biological survey corridor) because, in most cases, these areas were not known at the time of the surveys.

In recognition of these limitations, the following course of action was taken: (1) surveys would be performed on public lands and private lands where permission to access was obtained; (2) where access is not possible, other information such as regional habitat assessment models and air photos would be used to identify suitable habitat for each species; species would be assumed to be present (where appropriate); and mitigation would be developed based on that assumption.

TABLE 4. PROTOCOL WILDLIFE SURVEYS

Species Scientific Name	Common Name	Survey Protocol	Survey Locations 2008-2009[1]
Bufo californicus	Arroyo Toad	Six site visits should be made between March 15 and Jul 1 with seven days between site visits. If toads are discovered, the survey should cease. One site visit should be made in April, May, and June; night and daytime surveys should be conducted within the same 24-hour period.	• Segment D • Segment G • Dry Canyon • San Francisquito Canyon • Segment H
Rana aurora draytonii	California Red-Legged Frog	Four daytime and four nighttime aquatic and terrestrial habitat surveys for juvenile and adult frogs. Surveys should be conducted June through September and include a non-breeding survey.	• Segment G • Segment H • Dry Canyon • San Francisquito Canyon
Strix occidentalis occidentalis	California Spotted Owl	March 15 through August 31, this includes 3 site visits.	• Segment D • Segment G • Segment H • Segment J

[1] All locations with potential habitat were surveyed unless otherwise noted.

3.6 DATA ANALYSIS AND USE

The data collected for the proposed Project and segment routes was used: (1) to present biological resources data in text and graphic form; (2) to quantify impacts to vegetation communities and special status species; and (3) to determine where additional surveys may be required once project-specific features are sited and access is obtained.

For the proposed Project and all segments, all structure pads, roads and other impact features were estimated using an access model to calculate anticipated impacts. Features such as towers and permanent access roads and spur roads were considered permanent impacts. Features such as pulling sites and staging areas were considered temporary impacts.

1. For areas in which protocol surveys could not be done, the analysis of biological impacts identifies suitable habitat areas in which the special-status species are likely to be present. Because the special status species are likely to be present in the identified habitat, in areas that were not surveyed due to limited access (i.e., dense chaparral) the impact assessment assumes species presence in all potential habitats, and mitigation is required.
2. Where habitat has been identified in which special status species are likely to be present, mitigation measures have been set forth to minimize the potential impact to species assumed to be present. The mitigation measures allow for protocol surveys to be done prior to construction. These surveys, assuming acceptance by the Wildlife Agencies, would focus impact acreage and resulting mitigation requirements to areas where the absence of special status-species has been determined.

Protocol survey reports were prepared in accordance with USFWS protocol for use by the BLM, USFS and USFWS as part of the Section 7 consultation. A Section 7 consultation is a process during which the lead federal agency, in consultation with the Secretary of the Interior/Secretary of Commerce, ensures that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of a listed species or result in the destruction of, or adverse modification of, designated critical habitat. The NEPA co-leads for the BRRTP are the USFS and BLM. The agencies will likely initiate the formal Section 7 consultation after selection of the preferred Project route.

Maps showing critical habitat, historical occurrences, observations during surveys conducted for this project, survey locations, and the location of the proposed Project and each segment are provided in Appendices A and B.

4.0 AFFECTED ENVIRONMENT

The physiography of the Project area in the Los Angeles and Kern County regions from north to south is the flat Antelope Valley gradually rising in elevation (Northern region) and giving way to the foothills of the Angeles National Forest (Central region). Continuing south, the foothills gradually give way to the City of Santa Clarita (Southern region). Drainages originating from the foothills of the Angeles National Forest have carried rock detritus and water to the Santa Clarita area. This has produced several riparian areas which support a rich, varied, and unique ecosystem. The diversity and distribution of biological resources within the study corridor are a function of the regional climate, soils, and topography. For most of the region, the availability of water or soil moisture is the critical factor that determines the broad distribution of vegetation types and associated wildlife species. Provided in sections 4.1, 4.2, and 4.3 is a detailed description, including site-specific data, for vegetation types, common wildlife, special status plants and wildlife with the potential to occur within the Project area. To provide baseline conditions for the dominant soil type, water and habitat characteristics the biological study was divided to three ecotype regions (Northern, Central and Southern).

4.1 NORTHERN REGION

The Project corridors in the northern region consisting of Segment A, B, C, F, 115, and the northern end of Segment D lie within the Mojave Ecotype characterized by desert salt brush with scattered and isolated rural residential properties and agricultural fields. The level of precipitation in this ecotype ranges from 4 to 10 inches annually (POWER 2011). The soils are predominantly comprised of alluvial plain and pediment with small hills (Table 5a). Dry lakes, or playas, occur in the arid northern portion of the Project area. Within the Antelope Valley Watershed, streams crossed by the study corridors include Cache Creek, Oak Creek, Cottonwood Creek, Armargosa Creek, Anaverde Creek, Railroad Canyon Creek, Willow Springs, and multiple unnamed perennial and intermittent streams. Segment C parallels the First and Second Los Angeles Aqueducts in the northernmost portion of the Project, and both aqueducts occur within the study corridor.

In the northern end of the Project area, human occupation of the Antelope Valley has significantly altered these local habitats and wildlife resources, as agricultural, military, and development activities have resulted in an overall reduction of biodiversity and population of wildlife species within the terrestrial habitats.

TABLE 5A. SOIL TYPES PRESENT IN THE NORTHERN REGION

Segment	Soil Series	Drainage Class	Series Soil pH
A	Arizo	Excessively drained	Neutral
A	Cajon	Excessively drained	Mild/moderately alkaline
A	Garlock	Well drained	Moderately alkaline
A	Muroc	Well drained	Moderately alkaline
B	Cajon	Excessively drained	Mild/moderately alkaline
B	Garlock	Well drained	Moderately alkaline
B	Greenfield	Well drained	Neutral
B	Hanford	Well drained	Slightly acid
B	Hesperia	Well drained	Slightly acid
B	Ramona	Well drained	Moderately acid
B	Rosamond	Well drained	Mildly alkaline
B	Sunrise	Moderately well drained	Moderately alkaline
C	Adelanto	Well drained	Neutral
C	Arizo	Excessively drained	Neutral to strongly alkaline
C	Cajon	Excessively drained	Mild/moderately alkaline
C	Garlock	Well drained	Moderately alkaline
C	Greenfield	Well drained	Neutral

Segment	Soil Series	Drainage Class	Series Soil pH
C	Hanford	Well drained	Slightly acid
C	Hesperia	Well drained	Slightly acid
D - North of ANF	Cajon	Excessively drained	Mild/moderately alkaline
D - North of ANF	Chino	Excessively drained	Neutral
D - North of ANF	Dune land	Excessively drained	Neutral
D - North of ANF	Greenfield	Well drained	Neutral
D - North of ANF	Gorman	Well drained	Neutral
D - North of ANF	Hanford	Well drained	Slightly acid
D - North of ANF	Hesperia	Well drained	Slightly acid
D - North of ANF	Millsholm	Well drained	Moderately acid
D - North of ANF	Oak Glen	Well drained	Neutral
D - North of ANF	Ramona	Well drained	Moderately acid
D - North of ANF	Rough broken land	N/A	Neutral
D - North of ANF	Vernalis	Well drained	Slightly alkaline
E	Cajon	Excessively drained	Mild/moderately Alkaline
E	Greenfield	Well drained	Neutral
E	Hanford	Well drained	Neutral
E	Hesperia	Well drained	Slightly acid
E	Ramona	Well drained	Moderately acid
E	Vista	Well drained	Neutral
F	Greenfield	Well drained	Neutral
F	Hanford	Well drained	Slightly acid
F	Ramona	Well drained	Moderately acid

Within the northern eco-region boundary ten different vegetation communities were mapped. Table 5b lists these habitat types including acres and percentage of total acreage within the proposed Project. Full descriptions of each of these habitats are provided in section 4.1. The most common vegetation series are the *Larrea tridentata* (Creosote bush), *Yucca brevifolia* (Joshua tree), and *Artemisia californica* (California Sagebrush) at lower elevations (USFS 2005, Holland 1986). Along Segment C, F, and northern end of Segment D at higher elevations (3,000 feet) *Juniperus californica* (California juniper) and *Ceanothus* spp. Sugar Brush series are the most common. Common wildlife species throughout the Northern Region are indicative of the high desert environments and agricultural centers of Southern California. Wildlife associated with the area include, but are not limited to mule deer (*Odocoileus hemionus*), coyotes, ground squirrels, kangaroo rats, kit fox, and muskrats. Birds include waterfowl, hawks, golden eagle, falcons, ravens, turkey vultures, western scrub jay, quail and mourning dove (CDFG 2010, USFS 2005). Reptile species observed during surveys or expected to occur include the western fence lizard (*Sceloporus occidentalis*), side-blotched lizard (*Uta stansburiana*), desert spiny lizard (*S. magister*), desert iguana (*Dipsosaurus dorsalis*), and western rattlesnake (*Crotalus viridis*). Chuckwallas (*Sauromalus ater*), red racers (*Coluber constrictor*), common kingsnakes (*Lampropeltis getula*), gopher snakes (*Pituophis catenifer*), and western whiptail lizards (*Aspidoscelis tigris*) are also commonly found in the Northern Region.

TABLE 5B. VEGETATION TYPES OCCURRING IN THE NORTHERN REGION

Segment*	Vegetation Community	Total Acreage of Segment	Temporary Disturbance (Ac.)	Maximum Permanent Disturbance (Ac.)	Percentage of Total Habitat Affected
A	Joshua Tree Woodland	52.39	5.62	0.69	12.04
A	Mojave Creosote Bush Scrub	675.88	73.17	9.00	12.16
A	Mojave Wash Scrub	77.50	8.31	1.02	12.04
B	Agricultural Land	504.27	54.16	6.67	12.06
B	California Annual Grassland	123.25	13.22	1.63	12.05
B	Joshua Tree Woodland	267.93	28.74	3.54	12.05

Segment*	Vegetation Community	Total Acreage of Segment	Temporary Disturbance (Ac.)	Maximum Permanent Disturbance (Ac.)	Percentage of Total Habitat Affected
B	Mojave Creosote Bush Scrub	715.96	76.77	9.45	12.04
C	Joshua Tree Woodland	152.67	16.38	8.36	16.20
C	Mojave Creosote Bush Scrub	1134.41	121.79	61.95	16.20
C	Mojave Wash Scrub	0.05	0.01	0	20.00
C	Rabbitbrush Scrub	26.85	2.88	1.77	17.32
D	Agricultural Land	31.72	3.45	1.93	16.96
D	California Annual Grassland	644.65	69.27	22.71	14.27
D	Disturbed/developed	30.44	3.25	0.40	11.99
D	Joshua Tree Woodland	129.16	13.88	6.17	15.52
D	Mojave Creosote Bush Scrub	261.31	28.03	7.48	13.59
D	Rabbitbrush Scrub	120.68	12.97	5.93	15.66
D	Scrub Oak Chaparral	1.32	0.14	0.02	12.12
D	Southern Mixed Chaparral	185.03	32.97	11.69	24.14
E	Agricultural Land	390.37	37.72	5.52	11.08
E	California Annual Grassland	138.90	13.38	1.83	10.95
E	Joshua Tree Woodland	39.89	3.84	1.13	12.46
E	Mojave Creosote Bush Scrub	114.61	11.04	2.81	12.08
F1	Agricultural Land	50.60	5.85	0.72	12.98
F2	Agricultural Land	60.65	6.5	0.8	12.04
F2	California Annual Grassland	106.97	11.7	4.56	15.20
115	Agricultural Land	143.52	13.83	6.25	13.99
115	California Annual Grassland	119.24	11.63	3.84	12.97
115	Riversidian Sage Scrub	28.03	2.71	0.68	12.09

*Because Segments E and 115 have been eliminated from consideration for construction, the data provided in this table for these segments has not been updated and reflects the most recent data before they were eliminated.

4.2 CENTRAL REGION

Segment H, 2a, G, J, I, and southern end of Segment D within the ANF are located in steep, mountainous terrain of the eastern Transverse Ranges, including the northern San Gabriel and Liebre Mountains. The ecotype is considered the Northern Transverse Range and is characterized by broad fault blocks and alleviated lowlands, and is dissected by granitic uplands (Table 5c). The eco-region is characterized by its high elevation setting and the influence from upper level weather patterns in the west, decreasing to mid-elevation ranges along the eastern section. Along the southern end of the eco-region, the high-elevation mountain range transcends into the foothills of the Santa Clarita Valley. Long periods of hot, dry weather are not uncommon at the high elevations of the Northern Transverse Ranges. Precipitation ranges from 6-40 inches annually throughout the eco-region.

TABLE 5C. SOIL TYPES PRESENT IN CENTRAL REGION

Segment	Soil Series	Drainage Class	Series Soil pH
D - ANF and South	Cortina	Excessively drained	Slightly acid
D - ANF and South	Hanford	Well drained	Slightly alkaline
D - ANF and South	Metz	Somewhat excessively drained	Moderately alkaline
D - ANF and South	Millsholm	Well drained	neutral to slightly acid
D - ANF and South	Mollic Haploxeralfs	Well drained	Extremely acid
D - ANF and South	Osito family	Well drained	neutral to slightly acid
D - ANF and South	Rock outcrop	N/A	Neutral
D - ANF and South	Saugus	Well drained	Slightly acid
D - ANF and South	Trigo family	Somewhat excessively drained	Slightly acid
G	Amargosa	Excessively drained	Neutral

Segment	Soil Series	Drainage Class	Series Soil pH
G	Chino	Excessively drained	Moderately alkaline
G	Exchequer family	Somewhat excessively drained	Slightly acid
G	Greenfield	Well drained	Neutral
G	Hanford	Well drained	Slightly acid
G	Lodo family	Somewhat excessively drained	Slightly acid
G	Millsholm	Well drained	Slightly acid
G	Mollic Haploxeralfs	Well drained	Extremely acid
G	Ramona	Well drained	Moderately acid
G	Rock outcrop		Neutral
G	San Andreas family	Well drained	Moderately acid
G	Trigo family	Somewhat excessively drained	Slightly acid
G	Tujunga family	Excessively drained	Slightly acid
G	Vista	Well drained	Neutral
G	Yolo	Well drained	Neutral
2a	Amargosa	Excessively drained	Neutral
2a	Exchequer family	Somewhat excessively drained	Slightly acid
2a	San Andreas family	Well drained	Moderately acid
2a	Trigo family	Somewhat excessively drained	Slightly acid
H1	Greenfield	Well drained	Neutral
H1	Hanford	Well drained	Slightly acid
H1	Ramona	Well drained	Moderately acid
H1	Vista	Well drained	Neutral
H2	Amargosa	Excessively drained	Neutral
H2	Castaic	Well drained	Slightly acid
H2	Chino	Excessively drained	Moderately alkaline
H2	Exchequer family	Somewhat excessively drained	Slightly acid
H2	Gaviota	Well drained	Neutral
H2	Greenfield	Well drained	Neutral
H2	Hanford	Well drained	Slightly acid
H2	Lodo family	Somewhat excessively drained	Slightly acid
H2	Millsholm	Well drained	Slightly acid
H2	Ramona	Well drained	Neutral
H2	Trigo family	Somewhat excessively drained	Slightly acid
H2	Tujunga family	Excessively drained	Slightly acid
H2	Vista	Well drained	Neutral
H2	Yolo	Well drained	Neutral
I	Amargosa	Excessively drained	Neutral
I	Anaverde	Well drained	Neutral
I	Castaic	Well drained	Slightly acid
I	Cortina	Excessively drained	Slightly acid
I	Exchequer family	Somewhat excessively drained	Slightly acid
I	Godde	Well drained	Slightly acid
I	Greenfield	Well drained	Neutral
I	Hanford	Well drained	Slightly acid
I	Lodo family	Somewhat excessively drained	Slightly acid
I	Metz	Somewhat excessively drained	Moderately alkaline
I	Mocho	Well drained	Moderately alkaline
I	Saugus	Well drained	neutral to slightly acid
I	Vista	Well drained	Neutral
I	Wyman	Well drained	Neutral
I	Yolo	Well drained	Neutral
J	Castaic	Well drained	Slightly acid
J	Hanford	Well drained	Slightly acid
J	Metz	Somewhat excessively drained	Moderately alkaline

Segment	Soil Series	Drainage Class	Series Soil pH
J	Millsholm	Well drained	Slightly acid
J	Mollic Haploxeralfs	Well drained	Extremely acid
J	Rock outcrop	N/A	Neutral
J	Saugus	Well drained	neutral to slightly acid
J	Zamora	Well drained	Neutral

Within the central eco-region boundary, the vegetation composition is predominantly chaparral and shrub vegetation. The total acreage for all vegetation communities in this region of the Project is approximately 7,057 acres (Table 5D). The eco-region is dominated by mixed chaparral series with a sparse mixture of oak, riparian, and pine forests, decreasing in density as the elevation drops into the Santa Clarita Valley and Los Angeles Basin (Table 5d). Predominant plant species include *Adenostoma fasciculatum* (chamise), *Arctostaphylos glauca* (big berry manzanita), *Ceanothus* spp. (ceanothus species), *Quercus* spp. (oak species), and *Pinus sabiniana* (Gray pine). There are three major drainages and several small drainages that originate from the foothills of the Angeles National Forest and spread over the northwestern Los Angeles County region. The San Francisquito Canyon Creek, a minor drainage in the area, has several small distributaries. A second drainage, originating from Bouquet Reservoir, is Bouquet Canyon Creek. The third drainage, Santa Clara River, has several small distributaries, including Mint Canyon Creek, Rowher Canyon Creek, and Aqua Dulce Canyon Creek. The Santa Clara River also has two minor distributaries, San Francisquito Canyon Creek and Bouquet Canyon Creek. Many reaches of these natural and modified stream channels have the ability to support riparian areas and function as wildlife corridors.

TABLE 5D. VEGETATION TYPES OCCURRING IN THE CENTRAL REGION

Segment*	Vegetation Community	Total Acreage of Segment	Temporary Disturbance (Ac.)	Maximum Permanent Disturbance (Ac.)	Percentage of Total Habitat Affected
D	Chamise Chaparral	655.56	85.58	24.33	16.77
D	Disturbed/developed	1.13	0.12	0.06	15.93
D	Riversidian Sage Scrub	447.94	70.23	19.43	20.02
D	Southern Coast Live Oak Riparian Forest	6.67	0.71	0.09	11.99
D	Southern Cottonwood Willow Riparian Forest	8.04	0.86	0.42	15.92
D	Southern Mixed Chaparral	349.92	45.81	14.13	17.13
D	Southern Sycamore Alder Riparian Woodland	5.82	0.65	0.32	16.67
D	Southern Willow Scrub	12.91	1.30	0.32	12.55
D	Valley Oak Woodland	24.80	2.66	1.01	14.80
G	Agricultural Land	231.07	24.78	4.48	12.66
G	California Annual Grassland	104.12	11.18	3.64	14.23
G	Chamise Chaparral	344.44	39.38	10.11	14.37
G	Disturbed/developed	329.58	35.35	10.29	13.85
G	Riversidian Sage Scrub	91.50	10.06	2.44	13.66
G	Southern Coast Live Oak Riparian Forest	20.33	3.40	0.69	20.12
G	Southern Mixed Chaparral	121.16	12.99	5.11	14.94
G	Southern Riparian Scrub	6.19	0.66	0.33	15.99
G	Southern Sycamore Alder Riparian Woodland	21.76	2.33	0.89	14.80
2a	Disturbed/developed	104.14	10.93	4.65	14.96
2a	Interior Live Oak Chaparral	53.92	5.60	2.06	14.21
2a	Scrub Oak Chaparral	30.05	3.19	1.46	15.47
2a	Southern Mixed Chaparral	210.91	21.74	6.11	13.20

Segment*	Vegetation Community	Total Acreage of Segment	Temporary Disturbance (Ac.)	Maximum Permanent Disturbance (Ac.)	Percentage of Total Habitat Affected
H1	California Annual Grassland	159.37	15.36	7.46	14.32%
H1	Riversidian Sage Scrub	4.74	0.99	0.39	29.11
H2	Agricultural Land	55.44	5.34	2.07	13.37
H2	Chamise Chaparral	568.39	37.51	4.03	7.31
H2	Riversidian Sage Scrub	76.79	7.10	2.07	11.94
H2	Scrub Oak Chaparral	18.33	1.21	0.13	7.31
H2	Southern Mixed Chaparral	315.12	21.83	3.27	7.97
I	California Annual Grassland	310.89	33.67	12.25	14.77
I	Chamise Chaparral	106.89	11.47	5.41	15.79
I	Disturbed/developed	192.17	20.65	7.89	14.85
I	Riversidian Sage Scrub	770.37	106.98	42.68	19.43
I	Scrub Oak Chaparral	308.85	36.77	17.02	17.42
I	Southern Mixed Chaparral	181.54	19.47	8.50	15.41
I	Southern Riparian Scrub	59.19	6.35	2.76	15.39
I	Southern Sycamore Alder Riparian Woodland	17.40	1.90	0.94	16.32
J	Chamise Chaparral	342.42	51.84	17.90	20.37
J	Disturbed/developed	11.04	1.18	0.58	15.94
J	Riversidian Sage Scrub	358.05	39.30	10.87	14.01
J	Southern Coast Live Oak Riparian Forest	6.79	0.73	0.09	12.08
J	Southern Cottonwood Willow Riparian Forest	7.79	0.83	0.41	15.92
J	Southern Sycamore Alder Riparian Woodland	3.59	0.38	0.19	15.88

*Because Segments H1 and H2 have been eliminated from consideration for construction, the data provided in this table for these segments has not been updated and reflects the most recent data before they were eliminated.

Wildfires are an integral part in the biodiversity of plant and animals ecosystems in Southern California (Zedler 1995). Several fires have occurred in the Central region and the largest of the burned areas within the Project area occurred during the 1968 Liebre Fire, which burned 48,512 acres. Within the last fifty years, there have been eight fires that have burned over 10,000 acres within the Project area. One of the recent large wildfires was the 2007 Buckweed Fire, which burned approximately 40,000 acres east of Santa Clarita and to the north of State Route 14.

The chaparral-shrubland community is tolerant to the disturbance of fire and will generally dominate a burned site several decades after a fire. The ability for chaparral plant communities to recover from fire is highly favorable, contributing to plant succession by influencing the germination of seeds and the stimulation of spouting seedlings. Early successional plant species, including native and non-native grasses and perennials, will generally dominate a burned site for the first several years after a fire. However, negative impacts have been associated with the increase in frequency of Southern California's large fires. Changes in dominant vegetation communities dramatically affect the habitat for plant and animal species. For example, the coastal California gnatcatcher is dependent primarily on coastal sage scrub vegetation. If this vegetation is burned too many times, it may convert to non-native grassland or a disturbed habitat that would preclude its use by the gnatcatcher. The introduction of non-native species in recent burn areas significantly affects native ecosystems. Non-native invasive grass species such as cheat grass (*Bromus tectorum)* favor disturbed areas and establish themselves strongly, out-competing native plant habitat. These introduced annuals cure early and remain flammable during a long fire season, thereby increasing the frequency of wildfire because of the abundance of early cured fine fuels (POWER 2011). The Buckweed Fire burned most of the G and H segments. The vegetation within this burn area is still in an early successional state and is therefore, more vulnerable to ground disturbance and subsequent weed invasion.

Fires often cause a short-term increase in productivity, availability, or nutrient content of forage. These changes can contribute to substantial increases in herbivore populations, but potential increases are moderated by animals' ability to thrive in the altered, often simplified, structure of the post-fire environment. Large, high-intensity fires that denude the landscape of many shrubs and trees reduce habitat quality for species that require dense cover and improve it for species that prefer open sites. Thus, habitat changes (e.g., alteration of cover protection and available food resources) occurring from a wildfire could be more detrimental to faunal populations and communities than fire itself. In many desert and semi-desert habitats, the history of wildfire occurrences is fairly infrequent because of sparse fuels.

4.3 SOUTHERN REGION

Segment K is within the Sierra Pelona-Mint Canyon eco-region. The eco-region is characterized by mid-elevation foothills and urban development. The soils are well drained and have xeric characteristics; underlying rock is sedimentary with portions of granite (Table 5e). Significantly, Santa Ana winds formed in the desert advance toward the low pressure of the Coastal Ranges, and sweep through the Santa Clarita Valleys and Los Angeles Basin of this eco-region. Annual precipitation in the region ranges from 12-20 inches.

TABLE 5E. SOIL SERIES FOR THE SOUTHERN REGION

Segment	Soil Series	Drainage Class	Series Soil pH
K	Calcixerollic Xerochrepts	Well drained	N/A
K	Cortina	Excessively drained	Slightly acid
K	Hanford	Well drained	Slightly acid
K	Metz	Somewhat excessively drained	Moderately alkaline
K	Millsholm	Well drained	Slightly acid
K	Riverwash	Excessively drained	N/A
K	Saugus	Well drained	Slightly acid
K	Sorrento	Well drained	Moderately alkaline
K	Yolo	Well drained	Neutral

Within the eco-region boundary, the vegetation composition is predominantly occupied by 43,583 acres of shrub, 31,922 acres of mix grass-shrub, and 28,254 acres of timber. The dominant plant communities are Chamise (*Adenostoma fasciculatum*), Manzanita (*Arctostaphylos glauca*), Sugar Brush (*Ceanothus* spp.), Toyon (*Heteromeles arbutifolia*), Coastal live oak (*Quercus agrifolia*), and mixed shrublands.

TABLE 5F. VEGETATION TYPES WITHIN THE SOUTHERN REGION

Segment	Vegetation Community	Total Acreage of Segment	Temporary Disturbance (Ac.)	Maximum Permanent Disturbance (Ac.)	Percentage of Total Habitat Affected
K	Chamise Chaparral	73.31	7.86	3.32	15.25
K	Disturbed/developed	400.77	43.18	7.45	12.63
K	Riversidian Sage Scrub	129.39	13.88	5.40	14.90
K	Sandy Area Other than Beaches	12.07	1.29	0.28	13.01
K	Southern Coast Live Oak Riparian Forest	22.54	2.42	1.19	16.02
K	Southern Mixed Chaparral	237.84	25.51	10.71	15.23
K	Southern Riparian Scrub	48.38	5.19	1.95	14.76
K	Southern Sycamore Alder	6.06	0.65	0.32	16.01

Segment	Vegetation Community	Total Acreage of Segment	Temporary Disturbance (Ac.)	Maximum Permanent Disturbance (Ac.)	Percentage of Total Habitat Affected
	Riparian Woodland				
K	Southern Willow Scrub	9.10	0.98	0.12	12.09

4.4 VEGETATION COMMUNITIES

Vegetation within all parts of the project area, including ANF and BLM lands, was classified using Holland's *Preliminary Descriptions of the Terrestrial Natural Communities of California* as a guide and primary reference (Holland 1986). Holland's system was used because it includes all of the basic vegetation types found within the Project area and can be applied when most data used in classification are qualitative, as is the case for this Project. Equivalent series from *A Manual of California Vegetation* (Sawyer and Keeler-Wolf 1995) are included when possible.

Vegetation descriptions were recorded in field notes during special-status plant field surveys (Appendix B).

4.4.1 Vegetation Types Observed

California Annual Grassland

California annual grassland is the current name for Holland's type called Non-native Grassland (Holland 1986). As described by Holland (1986), this is an upland type composed of a dense to sparse cover of mainly introduced annual grasses, usually less than three feet in height. California annual grassland is widespread in coastal and interior California. It occurs on a variety of soil types, often on level or rolling terrain. California annual grassland may contain some native perennial grasses, and often includes a diverse assemblage of native annual and perennial forbs (wildflowers). The species composition of annual grasses and forbs varies considerably between stands. The equivalent series in the system of Sawyer and Keeler-Wolf (1995) is the California annual grassland series.

Annual grass species common in this habitat include slender wild oat (*Avena barbata*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*). Native annual and perennial forbs observed in California annual grassland include blow-wives *(Achyrachaena mollis),* spear-leaved agoseris *(Agoseris retrorsa),* common fiddleneck *(Amsinckia menziesii),* California goosefoot *(Chenopodium californicum),* Turkish rugging *(Chorizanthe staticoides),* four-spot clarkia (*Clarkia purpurea* ssp. *quadrivulnera),* woodland clarkia *(Clarkia unguiculata),* California sun cup *(Camissonia californica),* Parry's larkspur (*Delphinium parryi*), Nevada gilia *(Gilia brecciarum),* blue field gilia (*Gilia capitata),* California mustard (*Guillenia lasiophylla),* telegraph weed (*Heterotheca sessiliflora),* common sandaster (*Lessingia filaginifolia* var. *filaginifolia*), Spanish lotus (*Lotus purshianus)*, bajada lupine (*Lupinus concinnus*), Cleveland's malacothrix (*Malacothrix clevelandii),* short-lobed phacelia *(Phacelia brachyloba)*, and Parry's phacelia (*Phacelia parryi).* Native perennial bunch grasses were found within small patches, including foothill needlegrass *(Nassella lepida)*, and malpais bluegrass (*Poa secunda* ssp. *secunda*).

California annual grassland occurs on Segment B in scattered locations, in Segment D along most of its northern section, along the southeastern section of Segments E and F, on the northern portions of Segments G and H, along the northwestern half of the northern section of Segment I, and along the southern half of Segment 115.

Riversidian Sage Scrub

Riversidian sage scrub is the most xeric form of coastal sage scrub (Holland 1986). This Holland type consists of open stands of shrubs on dry sites such as steep slopes, severely drained soils, or dense clay soils. It intergrades with several types of southern California chaparral. The understory includes grasses and forbs. As described by Holland (1986), the dominant shrubs include California sagebrush (*Artemisia* *californica*) and California buckwheat (*Eriogonum fasciculatum*). This type is distributed along the western base of the Transverse and Peninsular Ranges from Los Angeles County to the Mexican border (Holland 1986).

Riversidian sage scrub consists of fairly open stands of low shrubs and subshrubs. Dominant species include California sagebrush, California buckwheat, brittlebush (*Encelia californica*), yerba santa (*Eriodictyon crassifolium*), sawtoothed goldenbush (*Hazardia squarrosa*), deerweed (*Lotus scoparius*), bush monkeyflower (*Mimulus aurantiacus*), white sage (*Salvia apiana*), and black sage (*Salvia mellifera*). Chamise (*Adenostoma fasciculatum*), holly-leaved redberry (*Rhamnus ilicifolia*), blue elderberry (*Sambucus mexicana*), and chaparral yucca (*Yucca whipplei*) also were present as associates. The forb and grass layer of Riversidian sage scrub is dominated by native and introduced annuals and perennials including common fiddleneck, wild oat (*Avena fatua*), shortpod mustard (*Hirschfeldia incana*), ripgut brome, red brome, miner's lettuce, popcorn flower (*Plagiobothrys* sp.), Parry's larkspur, blue dicks (*Dichelostemma capitatum*), golden yarrow (*Eriophyllum confertiflorum*), vinegar weed (*Trichostemma lanceolatum*), slender sunflower (*Helianthus gracilentus*), phacelia (*Phacelia* sp.), chia (*Salvia columbariae*), and fescue (*Vulpia* sp.).

Buckwheat scrub is a subtype of Riversidian sage scrub observed on Segments G and I. It may correspond to the California buckwheat series of Sawyer and Keeler-Wolf (1995). Buckwheat scrub is dominated by California buckwheat and deerweed. Associated shrub species include chamise, woolly blue-curls (*Trichostema lanatum*), California sagebrush, and black sage. Dominant annual grasses and forbs include fascicled tarweed (*Deinandra fasciculata*), cryptantha (*Cryptantha* sp.), wild oat, and red brome.

Riversidian sage scrub occurs on Segment D along the portion of the segment running adjacent to Castaic Lake, on the very southern section of Segment G, in various spots around the ANF border on Segment H, in locations scattered along the entire length of Segment I, on Segment J adjacent to most of Castaic Lake and around the proposed Haskell Canyon Switching Station site, and in patches within the northern half of Segment K.

Chamise Chaparral

Chamise chaparral is a Holland type of chaparral usually dominated by a nearly continuous canopy of chamise (Holland 1986). Many other shrub species can grow with chamise in this type, but they make up a small fraction of the total shrub cover. This fire-adapted vegetation type is found on steep, dry, rocky slopes, with shallow soils. It burns frequently, and after fire chamise shrubs and other shrubs in this type rapidly sprout back from the base. Mature chamise chaparral has few plants in the understory; however, after fire a dense understory layer of forbs and grasses may be present. Chamise chaparral is widespread in California; it is more abundant in southern California (Holland 1986). The corresponding series in Sawyer and Keeler-Wolf (1995) is the chamise series.

Within the ANF portion of the project area, chamise chaparral was observed within all of the segments (D, G, 2a, H, I, and J). Much of the surveyed area was burned in large wildfires in 2007 and during the last five years, so chamise and other shrubs were in an early stage of regrowth, and understory forbs and grasses were abundant and diverse at the time of the protocol-level surveys. Associated shrub species include toyon (*Heteromeles arbutifolia)*, holly-leaved cherry *(Prunus ilicifolia* ssp. *ilicifolia*), yerba santa, California buckwheat, deerweed, scrub oak (*Quercus berberidifolia*), holly-leaved redberry, white sage, black sage, poison oak (*Toxicodendron diversilobum*), and chaparral yucca. This shrub diversity indicates that, within the Project area, chamise chaparral intergrades with Riversidian sage scrub.

The forb and grass layer is typically very sparse, but after recent fires this layer was well-developed within burned areas. The special-status plant slender mariposa lily (*Calochortus clavatus* var. *gracilis*) was common in recently burned chamise chaparral at the time of the 2008 protocol-level surveys. Other common forbs and grasses included blazing star (*Mentzelia albicaulis*), wild oat, Pacific fescue (*Vulpia microstachys*), six-weeks fescue (*Vulpia octoflora),* shortpod mustard, ripgut brome, red brome, sun cups

(*Camissonia* sp.), popcorn flower, red-stemmed filaree (*Erodium cicutarium*), valley lessingia (*Lessingia glandulifera*), spear-leaved agoseris, lupines (*Lupinus* spp.), phacelia (*Phacelia* spp.), and fescue (*Vulpia* spp.).

Chamise chaparral occurs on Segment D along much of the southern section of the segment north and south of Castaic Lake, along the southern third and southern half of Segments G and H (respectively), in a small patch of Segment 2a, in small patches along the southern portion of Segment I, at the northern tip and along most of the southern half of Segment J, and in patches on Segment K.

Interior Live Oak Chaparral

Interior live oak chaparral is a Holland type (Holland 1986) of chaparral dominated by dense, tall shrubs of interior live oak (*Quercus wislizenii* var. *frutescens*) and California scrub oak (*Quercus dumosa*). Holland (1986) describes this as a mesic form of chaparral that interdigitates with chamise chaparral, especially at higher elevations. It is widespread in the interior mountains of California, with a patchy distribution in southern California.

Interior live oak chaparral is dominated by interior live oak and California scrub oak. Associated shrubs include California buckwheat, hoaryleaf ceanothus (*Ceanothus crassifolius*), canyon gooseberry (*Ribes menziesii*), hoary coffeeberry (*Rhamnus tomentella*), and poison oak.

Interior live oak chaparral was observed within Segment 2a.

Southern Mixed Chaparral

Southern mixed chaparral is described by Holland (1986) as a type composed of deep-rooted sclerophyllous fire-adapted shrubs reaching 6 to 12 feet in height. There is a very sparse understory in mature stands. The dominant shrubs vary from place to place, but include chamise, California scrub oak and one or more species of *Arctostaphylos* and *Ceanothus* (Holland 1986). This type is found on dry, rocky, steep slopes with little soil. It intergrades with chamise chaparral and may form a mosaic with Riversidian sage scrub. Corresponding series in Sawyer and Keeler-Wolf (1995) may include the chamise-bigberry manzanita series and the chamise-Eastwood's manzanita series.

Within the Project area, the dominant shrubs in southern mixed chaparral include chamise, Eastwood's manzanita (*Arctostaphylos glandulosa*), big-berry manzanita (*Arctostaphylos glauca),* California sagebrush, hoaryleaf ceanothus, and birchleaf mountain mahogany (*Cercocarpus betuloides*); associated species included interior goldenbush (*Ericameria linearifolia*), yerba santa, California buckwheat, scale-broom (*Lepidospartum squamatum*), deerweed, holly-leaved cherry, scrub oak, interior live oak, hoary coffeeberry, holly-leaved redberry, sugar bush (*Rhus ovata*), basketbush (*Rhus trilobata*), white sage, black sage, poison oak, and chaparral yucca.

The forb and grass layer includes wild oat, shortpod mustard, ripgut brome, red brome, sun cups, clarkia (*Clarkia* sp.), miner's lettuce, stiff-branch bird's beak (*Cordylanthus rigidus*), popcorn flower, Parry's larkspur (*Delphinium parryi*), slender buckwheat (*Eriogonum elongatum var. elongatum*), golden yarrow, cudweed (*Gnaphalium* sp.), vinegar weed, strigose bird's-foot-trefoil (*Lotus strigosus*), bajada lupine, showy penstemon (*Penstemon spectabilis*), phacelia, chia, chaparral nightshade (*Solanum xanti*), and fescue.

Southern mixed chaparral occurs on Segment D on and around the point at which the segment crosses the ANF, along much of the middle third of Segment G, along the southern half of Segment 2a, around Bouquet Reservoir to the San Andreas Rift Zone on Segment H, in scattered patches on Segment I, and in the center of Segment K.

Scrub Oak Chaparral

The Holland type Scrub oak chaparral is a dense evergreen chaparral dominated by scrub oak (Holland 1986) that reaches 20 feet in height. It grows on rocky slopes, at slightly higher elevations, and in more mesic sites, than other types of chaparral. It is widespread in the coastal areas of northern California, the Sierra foothills and the mountains of southern California.

The species of scrub oak observed in most sites appeared to be *Quercus berberdifolia* and canyon live oak (*Quercus chrysolepis*). Other shrub species present include deerbrush (*Ceanothus integerrimus*), California juniper (*Juniperus californica*), birchleaf mountain mahogany, holly-leaved cherry, and chaparral yucca.

Scrub oak chaparral was observed within patches throughout Segment I, and Segment 2a.

Mojavean Mixed Scrub

Mojavean mixed scrub is an open woodland dominated either by *Pinus monophylla* with an open shrubby understory of species commonly found in adjacent non-forested stands, or by *Juniperus californicus*, with understory of typical Mojave Mixed Scrub and Steppe species. Understories are more diverse than in most Pinyon-Juniper types, and many actually exceed tree cover. The pinyon type is better developed on steeper, very dry slopes, while the juniper type is better developed on gentle slopes or alluvium, and usually at slightly lower elevations. Also intergrades with Joshua Tree Woodland or Mojave Creosote Bush Scrub on drier soils at lower elevations 4,000-6,000 feet.

Some of the common shrubs are big sagebrush (*Artimesia tridentata*), four-wing saltbush (*Atriplex canescens*),birch -leaf mountain mahogany (*Cercocarpus betuloides*), rubber rabbitbrush (*Chrysothamnus nauseosus*), downy rabbitbrush (*Chrysothamnus viscidiflorus),* green ephedra (*Ephedra viridis*), goldenbush (*Ericameria linearifolia*), California buckwheat (*Eriogonum fasiculatum*), and flannel bush (*Fremontodendron californicum*).

Mojavean mixed scrub was located in patches along the northern portion of Segment D and I.

Mojave Creosote Bush Scrub

Mojave creosote bush scrub (Holland 1986) is the predominant vegetation type of the valleys, alluvial fans and the lower mountain slopes of the Mojave Desert. It is composed of widely spaced evergreen and drought-deciduous shrubs, cacti and yucca that range in height from one to nine feet. Creosote bush (*Larrea tridentata*) is the dominant shrub and indicator species for this type. Burrobush (*Ambrosia dumosa*) is also very common. Soils are typically well-drained, non-alkaline and non-saline, and sandy to gravelly. Mojave creosote bush scrub may correspond to one or more of the creosote bush, creosote bush-white bursage, or blackbush series of Sawyer and Keeler-Wolf (1995).

Dominant shrubs of Mojave creosote bush scrub within the Project area include creosote bush and burrobush. Other shrubs and cacti found in this type include cheesebush (*Hymenoclea salsola*), teddy-bear cholla (*Opuntia bigelovii*), and bladder sage (*Salazaria mexicana).* The mapping exercise was completed in summer, so very few herbaceous plants and grasses were seen, although these grow in great diversity and abundance during spring seasons of wetter years. Herbaceous forbs and grasses seen during the mapping survey include chia, wild buckwheat (*Eriogonum* spp.) and Mediterranean grass.

Mojave creosote bush scrub was observed along most of Segments A and C, in scattered patches along approximately half of Segment B, in patches along the northern end of Segment D, and off the ANF on Segment I.

Rabbitbrush Scrub

The Holland type rabbitbrush scrub (Holland 1986) consists of dense to open stands composed almost solely of rubber rabbitbrush (*Chrysothamnus viscidiflorus*) shrubs that are typically three feet in height. Rabbitbrush scrub is a disturbance-maintained type that occupies sites that have been burned, grazed, tilled, or otherwise disturbed (Holland 1986). The rubber rabbitbrush series is the equivalent in the Sawyer and Keeler-Wolf (1995) system.

Within BLM lands crossed by the project, rabbitbrush scrub was observed to be in sites on Segment C where sections of the Los Angeles Aqueduct have been buried underground. Disturbance associated with pipeline construction likely was responsible for the development of this vegetation. This community has also been observed in patches on the northern end of Segment D.

Mojave Wash Scrub

Mojave wash scrub (Holland 1986) occupies the larger washes, arroyos and canyons throughout the Mojave Desert. These sites contain flowing water on an infrequent basis and have sandy, gravelly or rocky substrates. Mojave wash scrub is composed of open to dense stands of shrubs and small trees, which are mainly drought-deciduous. Dominant shrubs include catclaw acacia (*Acacia greggii*), desert willow (*Chilopsis linearis*), rabbitbrush species (*Chrysothamnus* spp.) and cheesebush. This type may correspond to the catclaw acacia series of Sawyer and Keeler-Wolf (1995).

This vegetation type was observed between areas of Mojave creosote bush scrub. The washes observed were often sparsely vegetated. Dominant species included cheesebush and rabbitbrush species.

Mojave wash scrub was observed in isolated patches along the length of Segment A.

Joshua Tree Woodland

Joshua tree woodland (Holland 1986) is an open "woodland" with Joshua trees (*Yucca brevifolia*)—up to 12 feet in height—as the only arborescent species, and many other shrub and cactus species in the understory. This type typically occupies well-drained, gentle alluvial slopes, with sandy, loamy or gravelly substrates.

Within BLM land crossed by the Project area, scattered Joshua trees form the overstory where this community was present. The understory includes California buckwheat, cheesebush, creosote bush, burrobush, rabbitbrush, and teddy-bear cholla. Few forbs and grasses were identifiable at the time of the survey. Dead plants that could still be identified included several species of wild buckwheat, fiddleneck (*Amsinckia* sp.) and Mediterranean grass.

Joshua tree woodland was observed on Segment A in a patch on the southern end, in patches along the northern ends of both Segments B and C, in patches around the Kern and Los Angeles County lines, and in a patch in the center of Segment E near the agricultural fields.

Coast Live Oak Woodland

As described by Holland (1986), coast live oak woodland is composed of semi-open stands dominated by evergreen trees of coast live oak (*Quercus agrifolia*). This type is widely distributed in coastal valleys and low hills of California. In southern California it is often restricted to north-facing slopes and shaded ravines (Holland 1986). The equivalent series in Sawyer and Keeler-Wolf (1995) is the coast live oak series.

Where this community is located within the Project area on ANF lands, coast live oak is the dominant tree, with an understory that includes holly-leaved redberry, chaparral nightshade, common bedstraw (*Galium aparine*), and California blackberry (*Rubus ursinus*). Associated species include durango root

(Datisca glomerata), common hareleaf *(Lagophylla ramosissima* ssp. *ramosissima),* giant wild-rye *(Leymus condensatus),* common horehound *(Marrubium vulgare),* California burclover (*Medicago polymorpha),* branching phacelia (*Phacelia ramosissima* var. *latifolia),* and blue elderberry.

Coast live oak woodland is present on Segment G around Drinkwater Flat and Bee Canyon, on Segment 2a, and on Segment H in Bouquet Canyon.

Riparian Willow Scrub

Riparian willow scrub is similar to Holland's southern willow scrub (Holland 1986), but differs from it because it is not a coastal type and does not occur along major rivers. The type referred to here as riparian willow scrub is a shrub-willow-dominated vegetation type; this vegetation is denser, and is found at higher elevations than alluvial wash scrub.

The predominant species are narrow-leaved willow (*Salix exigua*), red willow *(Salix laevigata*), and arroyo willow *(Salix lasiolepis).* There are a few scattered trees of western sycamore *(Platanus racemosa*) and coast live oak. Other shrub species include mulefat (*Baccharis salicifolia*), basketbush, California wild rose *(Rosa californica),* and poison oak. The herbaceous layer in this community includes emergent wetland species, such as Dudley's sedge (*Carex dudleyi),* Parish's spike-rush *(Eleocharis parishii),* toad-rush *(Juncus bufonius),* western rush *(Juncus occidentalis),* broadleaf cattail *(Typha latifolia*) white water-cress *(Rorippa nasturtium-aquaticum*) and water speedwell *(Veronica anagallis-aquatica).* Native perennial upland species include narrow-leaved California fuchsia (*Epilobium canum* ssp. *canum),* beardless wild-rye *(Elymus triticoides)* and giant wild-rye. This type may correspond to the mixed willow series of Sawyer and Keeler-Wolf (1995).

Riparian willow scrub was found along intermittent drainages within a section of Segment G.

Southern Sycamore-Alder Riparian Woodland

The Holland type southern sycamore-alder riparian woodland is a tall, open, broad-leaved, winter-deciduous streamside woodland (Holland 1986). Western sycamore, bigleaf maple (*Acer macrophyllum*), and white alder (*Alnus rhombifolia*) form the semi-open tree canopy. It is characteristic of drainages with seasonal high intensity flows in the Transverse and Peninsular ranges.

Within ANF land in the Project area, this type was found on a variety of substrates, including sandy alluvium. Variation in tree and shrub density and diversity occurs from site to site. In addition to western sycamore, big leaf maple, and white alder as dominant trees, this type includes as tree associates coast live oak and canyon live oak (*Quercus chrysolepis*). Dominant shrubs include Tucker's oak (*Quercus john-tuckeri*), arroyo willow, California sagebrush, mulefat, bush mallow (*Malacothamnus fremontii*), and California buckwheat. The diverse understory of herbaceous plants includes clarkia, seep monkey-flower (*Mimulus guttatus*), annual Indian paintbrush (*Castilleja minor*), chaparral honeysuckle (*Lonicera interrupta*), Hooker's evening primrose (*Oenothera elata*), tomcat clover (*Trifolium willdenovii*), California four o'clock (*Mirabilis californica*), sturdy sedge (*Carex alma*), toad-rush and sticky chickweed (*Cerastium glomeratum*). Invasive non-native plants common in this type include tamarisk *(Tamarix ramosissima*), tree tobacco *(Nicotiana glauca*) and rabbitsfoot grass (*Polypogon monspeliensis*).

Southern sycamore-alder riparian woodland was observed within Segment 2a and on Segment H.

Alluvial Wash Scrub

Alluvial wash scrub is a vegetation type not covered by the Holland (1986) classification system. It is a shrub-dominated type that occupies large washes with defined banks (to three feet in height) and streambeds composed of sandy alluvial deposits. These washes are associated with ephemeral drainage systems. The vegetation consists of scattered medium-sized to large shrubs typical of ephemeral drainage systems. The dominant shrubs include mulefat, scale-broom, interior goldenbush, narrow-leaved willow, red willow, Arroyo willow, seep monkey-flower *(Mimulus guttatus)*, and California buckwheat. The forb and grass layer includes showy penstemon, red brome, ripgut brome, and wild oat. This type is distinguished from riparian willow scrub by a more open canopy, greater shrub diversity, and lack of dominance by willows.

Alluvial wash scrub was observed within Segment D.

Ruderal Vegetation

Ruderal vegetation is the term used to describe upland vegetation of roadsides and other disturbed sites. It is composed mainly or entirely of weedy non-native grasses and forbs. Ruderal vegetation is not a natural vegetation type, so it is not included in the classification systems of Holland (1986) or Sawyer and Keeler-Wolf (1995).

The ruderal vegetation of the project area includes both introduced and native annual forbs and grasses. Common non-native species include red brome, shortpod mustard, soft chess, tumble mustard (*Sisymbrium altissimum*), Mediterranean grass (*Schismus* sp.), tocalote (*Centaurea melitensis*), and wild oat. Many of these are considered invasive by the California Invasive Plant Council (Cal-IPC 2006). Native species found in roadside locations include Pacific fescue, blue dicks, common fiddleneck, and vinegar weed.

Ruderal vegetation was found along access roads and around transmission towers within all of the proposed alternative transmission line segments.

Agricultural Land

Agricultural land is land used for the production of food and fiber, such as crops and livestock. It tends to have fewer buildings and roads than urban land. Agricultural land can grade into wetlands, making it difficult to place exact boundaries on this type of community. This type of land is most common in California in and around the Great Central Valley and in coastal plains and valleys.

Agricultural land was observed scattered throughout the southern half of Segment B, along most of the interior of Segment E, on the northern edges of Segments F, G, H, and Segment 115.

Disturbed/Developed

Disturbed/developed areas are generally subject to intensive use with much of the land covered by structures. Disturbed areas are typically characterized by heavily compacted or frequently disturbed soils, and are often devoid of vegetation or possess only a sparse cover, including ruderal communities which are well adapted to survive in such conditions.

Disturbed/developed areas were observed on Segment D around the community of Neenach and at Castaic Lake, on Segment G around the unincorporated community of Green Valley, on the eastern end of Segment 2a, in scattered areas throughout Segment I, on Segment J at Castaic Lake, and on the northern and southern ends of Segment K.

4.5 COMMON WILDLIFE

The vegetative communities described above serve as sources of reproduction, nesting, cover, shelter, and foraging/feeding habitats for a variety of wildlife species. The greatest diversity can be found within the Angeles National Forest. The following table lists vegetation communities observed within the BRRTP Project area, segments on which these communities occur, and examples of common wildlife species which may occur in each vegetation type.

TABLE 6. VEGETATION COMMUNITIES OBSERVED WITHIN THE PROJECT AREA

Vegetation Community	Segments Where Community Occurs	Common Wildlife That May Occur*
Agricultural Land	B, E, F, G, H, 115	American Kestrel, Cattle, Coachwhip, Coyote, Domestic Sheep, Gopher snake, Great Horned Owl, Horned Lark, Pacific Tree Frog, Red-tailed Hawk
Alluvial Wash Scrub	D	Black-throated Sparrow, California Tree Frog, Verdin, Western Toad
California Annual Grassland	B, D, E, F, G, H, I, 115	American Kestrel, Cattle, Coachwhip, Common Side-blotched Lizard, Coyote, Domestic Sheep, Gopher snake, Horned Lark, Pacific Tree Frog, Red-tailed Hawk, Western Fence Lizard, Western Toad, Western Whiptail
Chamise Chaparral	D, G, GVLA**, H, I, J, K	Bobcat, Common Side-blotched Lizard, Coyote, Gopher snake, Mule Deer, Pacific Tree Frog, Red-tailed Hawk, Western Fence Lizard, Western Whiptail
Coast Live Oak Woodland	G, GVLA, H	Blue-gray Gnatcatcher, California Tree Frog, Gopher snake, Great Horned Owl, Mule Deer, Pacific Tree Frog, Western Fence Lizard, Western Toad
Disturbed/Developed	D, G, GVLA, I, J, K	American Kestrel, Coyote, Gopher snake, Pacific Tree Frog, Red-tailed Hawk, Western Fence Lizard, Western Toad, Western Whiptail
Interior Live Oak Chaparral	GVLA	Blue-gray Gnatcatcher, Great Horned Owl, Mule Deer, Western Fence Lizard, Western Whiptail
Joshua Tree Woodland	A, B, C, D, E	Black-throated Sparrow, Coachwhip, Round-tailed Ground Squirrel, Verdin, Western Whiptail, White-tailed Antelope Ground Squirrel,
Mojave Creosote Bush Scrub	A, B, C, D, E	American Kestrel, Black-throated Sparrow, Coachwhip, Common Side-blotched Lizard, Red-tailed Hawk, Round-tailed Ground Squirrel, Verdin, Western Whiptail, White-tailed Antelope Ground Squirrel
Mojave Wash Scrub	A	Black-throated Sparrow, California Tree Frog, Coachwhip, Round-tailed Ground Squirrel, Verdin
Rabbitbush Scrub	C, D	American Kestrel, Black-throated Sparrow, Coachwhip, Common Side-blotched Lizard, Red-tailed Hawk, Round-tailed Ground Squirrel, Verdin, Western Whiptail, White-tailed Antelope Ground Squirrel
Riparian Willow Scrub	G	Blue-gray Gnatcatcher, California Tree Frog, Gopher snake, Pacific Tree Frog, Western Fence Lizard, Western Toad, Western Whiptail
Riversidian Sage Scrub	D, G, H, I, J, K, 115	Red-tailed Hawk, Western Fence Lizard
Ruderal Vegetation	D, G, GVLA, H, I, J	American Kestrel, Bobcat, Coyote , Gopher snake, Mule Deer, Western Fence Lizard, Western Toad, Western Whiptail
Scrub Oak Chaparral	I	Western Fence Lizard, Western Whiptail
Southern Mixed Chaparral	D, G, GVLA, H, I, J, K	Blue-gray Gnatcatcher, Common Side-blotched Lizard, Gopher snake, Mule Deer, Pacific Tree Frog, Red-tailed Hawk, Western Fence Lizard, Western Whiptail
Southern Sycamore-Alder Riparian Woodland	GVLA, H	Blue-gray Gnatcatcher, California Tree Frog, Gopher snake, Pacific Tree Frog, Western Fence Lizard, Western Toad

*General habitat preferences obtained from Stebbins 2003, Reid 2006, Jones and Lovich 2009, BNA 2010
** GVLA = Green Valley Localized Alternative

4.5.1 Mammals

Large mammals known to occur in the Project area include mule deer (*Odocoileus hemionus),* coyote (*Canis latrans*), and black bear (*Ursus americanus*). Most of the mammals common to the area have adapted to high diurnal temperatures by spending much of the day underground or in aestivation. As a result, the Project area supports a high proportion of burrowing rodents. Other typical mammalian species may include bobcat (*Lynx rufus*), white-tailed antelope ground squirrel (*Ammospermophilus leucurus*), and round-tailed ground squirrel (*Spermophilus tereticaudus*). This area also supports areas of grazing by domestic sheep (*Ovis aries*) and cattle (*Bos Taurus*).

4.5.2 Avifauna (Birds)

The open, sparsely vegetated habitats of the northern Project area do not typically support diverse species of birds; avian use is usually associated with structurally taller and denser habitats found in areas receiving more annual rainfall. Passerine birds (e.g., those species that include over half of all living birds and consist mainly of altricial songbirds of perching habits) are largely arid-adapted desert species. In general, bird diversity increases in the Project area during the spring and fall when neotropical migrants pass through the general area in route to summer breeding or wintering grounds. The various passerine bird species inhabiting the Project area are often site-specific according to corresponding habitat types. Common passerine species may include black-throated sparrow (*Amphispiza bilineata*), California horned lark (*Eremophila alpestris actia*), verdin (*Auriparus flaviceps)* and blue-gray gnatcatcher (*Polioptila caerulea*). Raptor species generally include red-tailed hawk (*Buteo jamaicensis*), great horned owl (*Bubo virginianus*), and American kestrel (*Falco sparverius*).

Songbirds were observed in high numbers throughout the Project area, though less so in desert habitats. Black phoebe (*Sayornis nigricans*), Say's phoebe (*Sayornis saya*), Pacific-slope flycatcher (*Empidonax difficilis*), common raven, American crow (*Corvus brachyrhynchos*), western scrub jay (*Aphelocoma californica*), California towhee (*Pipilo crissalis*), spotted towhee (*Pipilo maculates*), bushtit (*Psaltriparus minimus*), and red-winged blackbird (*Agelaius phoeniceus*) were some of the species detected during the surveys. Though most of the above species are largely sedentary, many migratory species, including many nocturnal migrants, are likely to use portions of the Project area as either stopover or destination habitat.

Upland game birds likely to occur in the Project area are Gambel's quail (*Callipepla gambelii*), California quail (*Callipepla californica*), and mountain quail (*Oreortyx pictus*). Gambel's quail typically occur in desert drainages and foothills and chaparral communities adjacent to these desert features (Brown et al. 1998). POWER biologists observed a covey of Gambel's quail flying in to roost in a draw dominated by willow trees within a complex of chaparral along Segment I. They are generally absent from desert scrub, such as the large expanse of Mojave creosote bush scrub extending throughout the desert portion of the Project area. Gambel's quail are likely to occur where suitable habitat is present along the northern portions of Segments F, G, H, and I, as well as most of Segments A and C. California quail generally require slightly moister habitats than Gambel's quail including chaparral, desert chaparral, and coastal sage scrub. This species typically night-roosts off the ground in oaks, junipers, or large shrubs (Calkins et al. 1999). California quail are most likely to occur throughout Segments G, H, and I in the patchwork of chaparral and sage scrub in the mountains south of the Mojave Desert. Mountain quail also inhabit shrub-dominated habitats, though they are more likely to be found in more rugged terrain and areas with denser vegetative cover than California quail (Gutiérrez and Delehanty 1999). Mountain quail in the Project area are likely to be found in the same areas as California quail, namely Segments G, H, and I, which contain suitable shrubby habitat.

This class of species is characterized by a largely terrestrial habitat preference with low-altitude, explosive flight. As with waterfowl, quail and their allies possess a small wing-size-to-mass ratio, making them prone to collision due to low maneuverability during flight (Bevanger 1998; Janss 2000).

Waterfowl (ducks, geese and swans), shorebirds (plovers, sandpipers and allies), waders (herons, egrets and bitterns), and other birds associated with aquatic habitat observed during surveys of water bodies included northern shoveler (*Anas clypeata*), mallard (*Anas platyrhynchos*), ruddy duck (*Oxyura jamaicensis*), common merganser (*Mergus merganser*), western grebe (*Aechmophorus occidentalis*), horned grebe (*Podiceps auritus*), pied-billed grebe (*Podilymbus podiceps*), common moorhen (*Gallinula chloropus*), California gull (*Larus californicus*), American coot (*Fulica americana*), double-crested cormorant (*Phalacrocorax auritus*), and great blue heron (*Ardea herodias*). It is reasonable to assume that many more species occur at Bouquet Reservoir and Castaic Lake, because of the higher species richness associated with aquatic habitats, than was observed during the limited time allotted to surveys. Further, intermittent streams adjacent to the Project's segments may also see increased usage by waders during winter and spring.

Waterfowl, wading birds, and shorebirds are at risk of collision because of anatomical and behavioral factors. Ducks suffer a particularly large amount of collisions, which is likely due to low flight maneuverability resulting from a small wing-size-to-mass ratio (Bevanger 1998). Gulls, though their wing-to-mass ratio is not particularly small, are represented disproportionately high as collision victims. This anomaly could be explained by their sheer amount of time in flight. Flocking and night migration, both of which may increase collision risk by limiting the view of victims (Henderson et al. 1996), are behaviors employed by many species within these groups.

Though some species in this category may forage in agricultural areas, most are restricted to larger bodies of water, such as those found in the Project area. Bouquet Reservoir and Castaic Lake are two such examples located adjacent to Segments H and J, respectively.

4.5.3 Herpetofauna (Reptiles and Amphibians)

Rock outcrops, bajadas, washes, and gravel plains each support a varied and often different herpetofauna; however, certain species are common across most habitats. Common herpetofauna may include western fence lizard (*Sceloporus occidentalis*), common side-blotched lizard (*Uta stansburiana*), western whiptail (*Aspidoscelis tigris*), gopher snake (*Pituophis melanoleucus*), coachwhip (*Masticophis flagellum)*, western toad (*Bufo boreas*), Pacific tree frog (*Pseudacris regilla*), and California tree frog (*Pseudacris cadaverina*).

4.6 SPECIAL-STATUS SPECIES

The study area currently supports both native and non-native plant communities, wildlife and habitats, and numerous sensitive species. Special-status species with the potential to occur within the study area were identified, including the following categories:

- Species federally listed or proposed for listing as threatened or endangered under the Endangered Species Act (ESA) (50 CFR 17.12 [listed plants], 50 CFR 17.11 [listed animals], and various notices in the Federal Register [FR] [proposed species]), along with species that are candidates for possible future listing as threatened or endangered under ESA (67 FR 40657, June 13, 2002).
- Species listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (CESA) (14 California Code of Regulations 670.5).
- Species that meet the definitions of rare or endangered under the California Environmental Quality Act (CEQA) (State CEQA Guidelines Section 15380).
- Plants listed as rare under the California Native Plant Protection Act (California Fish and Game Code Section 1900 et seq.).
- Plants considered by the CNPS to be "rare, threatened, or endangered in California" (Lists 1B and 2 in CNPS 2001).
- Plants listed by CNPS as plants about which more information is needed to determine their status and plants of limited distribution (Lists 3 and 4 in CNPS 2001), which may be included as special-status species on the basis of local significance or recent biological information.
- Animal species of special concern as listed by the California Department of Fish and Game (CDFG) (2009a).
- Animals fully protected in California (California Fish and Game Code Sections 3511 [birds], 4700 [mammals], 5050 [amphibians and reptiles], and 5515 [fish]).
- Species that are listed as Forest Service Sensitive species by the Regional Forester of the US Forest Service.
- Species that are "covered" under the BLM Sensitive species list.

Special-Status Plants: A listing of all the special status species considered is compiled in Table 8, which lists the species, their status, and potential for occurrence for each of the Project segments. The individual conservation statuses of the plants in this table are current with information listed by the CDFG (2008b and 2008c).

The following section discusses the 98 special-status plant species with potential to occur within 10 miles of the project area proposed route alternatives. The estimated likelihood of a species occurring within the Project area was based on its geographic range and its habitat preferences, using the following criteria:

- Are the habitat requirements of the species associated with any of the mapped vegetation types for each segment;
- Is the elevation range of the species within 500 feet of the elevation range of the segment; and
- Is the species known within 10 miles of the segment?

The following answers to the criteria above results in an occurrence statement for each species.

- YES to all three questions and known occurrence records—PRESENT
- YES to all three questions—LIKELY
- YES to habitat question and one other question—POSSIBLE
- YES to habitat question only—UNLIKELY
- NO to habitat question—ABSENT

Information on all special status plant species having an unlikely, possible, and/or likely potential of occurring or are present in at least one segment are summarized in Table 8 and provided below in the text.

Three species of special-status plants were located on ANF lands during protocol-level surveys conducted for this Project in 2008 and 2009 (Table 8). Slender mariposa lily (Forest Service Sensitive Species) was found in 119 locations on Segments D, G, H, and I. Peirson's morning-glory (CNPS List 4) was found in two locations on Segment H and in several location on Segment G that were not mapped because this species is more common than previously thought, and is not mapped or monitored by the Forest Service (VinZant personal communication, 2009). Short-joint beavertail was found in 59 locations on Segments D, G, and I. No special status plant species were located on lands other than the ANF. This is not to say that special status species are not present on these lands, only that protocol level field surveys were not completed on private property.

The alternatives that involve the fewest impacts to known special-status plant species occurrences (i.e., Present) and potential suitable habitat (i.e., Possible, Likely) are Alternative 1 (Segments A, C, and D) and Alternative 3 (Segment A, B, F, and I). The routes that involve the greatest impacts include Alternative 2 (A, B, and G) and Alternative 2a (Segments A, B, G, and 2a).

TABLE 7. SUMMARY OF THE PROBABILITY OF OCCURRENCE OF 93 POTENTIALLY OCCURRING SPECIAL-STATUS PLANT SPECIES, BY ROUTE ALTERNATIVE

Segment	Absent	Unlikely	Possible	Likely	Present
A	55	4	25	10	0
B	50	5	13	26	0
C	53	4	12	25	0
D	27	13	35	17	2
E	49	6	15	24	0
F	71	6	14	3	0
G	40	7	19	26	2

Segment	Absent	Unlikely	Possible	Likely	Present
H	37	5	36	15	1
I	35	4	38	15	2
J	42	15	22	15	0
K	42	16	17	19	0
115	61	5	25	3	0
2a	40	11	31	12	0
Total	**602**	**101**	**302**	**210**	**7**

4.6.1 Special-Status Plant Species

California Androsace

California androsace (*Androsace elongata* ssp. *acuta*) is a white-flowered annual herb in the Primrose Family (Primulaceae) that blooms during March to June (CNPS 2010). California androsace is associated with grassland, chaparral, coastal sage scrub, semi-desert shrub, pinyon-juniper woodland, and cismontane woodland at elevations of 1,000 to 3,940 feet (CNPS 2010). It typically occurs on dry grassy slopes and where vegetation cover is low and mesic conditions are present, such as on and adjacent to moss-covered soil or rock outcrops on north-facing slopes or along rocky washes (Hickman 1993, USFS 2005). It is the only subspecies of California androsace known from California (USFS 2005). California androsace is not federally or state listed. It is included on List 4.2 by the CNPS (CNPS 2010) and is included on the USFS watch list. Threats to California androsace may include grazing, trampling, fuels and vegetation management, invasive species (primarily cheatgrass), too-frequent fire, and recreational activities (USFS 2005).

There are historical collections of California androsace from the Elizabeth Lake Canyon in the ANF; a recent collection from Liebre Mountain confirms that this species persists on the ANF (USFS 2005). Considering its geographic range and habitat preferences, California androsace has a possible potential to occur on all segments within the Project area. No locations for California androsace were found during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which California androsace may occur are described below.**

Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment B: Possible. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment C: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment D: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Possible. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment F: Possible. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment.
Segment G: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment I: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 115: Possible. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Kusche's Sandwort

Kusche's sandwort (*Arenaria macradenia* var. *kuschei*) is a white-flowered perennial herb in the Pink Family (Caryophyllaceae) that blooms from June to July. This species grows in sunny, rocky openings within a mosaic of chaparral and oak woodland at elevations of 4,000 to 5,600 feet (CNPS 2010). All occurrences are on decomposed granite and are found in areas of gentle relief (USFS 2005). It is included on CNPS List 1B.1 (CNPS 2010). Threats to Kusche's sandwort occur from motorized recreational use and construction and maintenance of fuel breaks (USFS 2005).

Kusche's sandwort appears to be endemic to the Liebre Mountain area. It was rediscovered in 1995 on Liebre Mountain in northern Los Angeles County, on ANF land. A 1997 survey of potential habitat on Liebre Mountain and adjacent areas located six new populations (USFS 2005). The CNDDB (CDFG 2008a) lists five occurrences for this species, all from the Liebre Mountain area. The Consortium of California Herbaria (Jepson Online Interchange 2008) lists 19 specimens of this taxon, all from the Liebre Mountain area.

Based on its geographic range and habitat preferences, Kusche's sandwort has a possible potential to occur on segments G, H, I, and 2a and an unlikely potential to occur on segments D, J, and K in the Project area. Kusche's sandwort was not observed during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which Kusche's sandwort may occur are described below.**

Segment D: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment K: Unlikely. Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

San Gabriel Manzanita

San Gabriel manzanita *(Arctostaphylos gabrielensis)* is an evergreen shrub with red berries in the Heath Family (Ericaceae) that blooms in March. This species is associated with rocky outcrops in chaparral at an elevation of 4,995 feet (Hickman 1993, CNPS 2010). It is included on CNPS List 1B.1 (CNPS 2010).

San Gabriel manzanita is threatened by power line construction and is known only from one occurrence on Mill Creek Summit divide in the San Gabriel Mountains, on ANF land (CDFG 2010, CNPS 2010).

Based on its geographic range and habitat preferences, San Gabriel manzanita has an unlikely potential to occur on segments D, G, H, I, J, K, and 2a. San Gabriel manzanita was not observed during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which San Gabriel manzanita may occur are described below.**

Segment D: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment G: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment H: Unlikely. Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment I: Unlikely. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment K: Unlikely. Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment 2a: Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Braunton's Milk-vetch

Braunton's milk-vetch (*Astragalus brauntonii*) is a short-lived perennial shrub in the legume family (Fabaceae) that typically occurs in fire-afflicted areas in dry, open chaparral below 2,100 feet in elevation. Braunton's milk-vetch was historically found in gravelly clay soils overlaying granite and sandstone, but is currently associated with carbonate soils derived from scattered limestone lenses; soil specificity accounts for its limited distribution. Braunton's milk vetch typically appears the spring following a chaparral fire, living for a few years before senescing or being crowded out by developing vegetation (Skinner 1991). Braunton's milk-vetch has white, wooly foliage with bright purple inflorescences blooming from January through August and can reach a height of six feet.

Braunton's milk-vetch is federally listed as endangered (CDFG 2009b), and placed on List 1B.1 by the CNPS (CNPS 2009). Braunton's milk-vetch is endemic to southern California, and has been documented only in Los Angeles and Orange counties. Braunton's milk-vetch is threatened by development, vegetation/fuel management activities, and alteration of local fire regimes (CNPS 2009).

There are no known populations of this species near the Project area, but there are extensive areas vegetated with chaparral that burned in 2007. Based on its geographic range and habitat preferences, Braunton's milk-vetch has a possible potential to occur on all segments except for C and 2a, where it would be unlikely to occur. However, its soil requirements would likely restrict this species to a lower probability of occurrence. Braunton's milk-vetch was not observed during botanical surveys conducted for this project in 2008 or 2009 on ANF lands. **Segments in which Braunton's milk-vetch may occur are described below.**

Segment A: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.
Segment B: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.
Segment C: Absent. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.

Segment D: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Mixed Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Absent. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.
Segment F: Possible. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment.
Segment G: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 115: Possible. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Bear Valley Woollypod

Bear Valley woollypod *(Astragalus lentiginosus* var. *sierra)* is a perennial herb in the Pea Family (Fabaceae). It blooms during April to August with whitish, pink-tinged flowers that develop into bladdery fruits (CNPS 2010). This species occurs in rocky meadows and pine woodlands and is associated with Mojavean desert scrub, meadows and seeps, pinyon and juniper woodland, and upper montane coniferous forest (Hickman 1993, CNPS 2010). It is included on CNPS List 1B.2 and is a Forest Sensitive species (CNPS 2010). It is known from 19 occurrences and occurs in the project county of Ventura (CDFG 2010).

There are no known populations of this species near the Project area. Based on its geographic range and habitat preferences, Bear Valley woollypod has an unlikely potential to occur on segments A, B, C, D, and E. Bear Valley woollypod was not observed during botanical surveys conducted for this project in 2008 or 2009 on ANF lands. **Segments in which Bear Valley woollypod may occur are described below.**

Segment A: Unlikely. Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment B: Unlikely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment C: Unlikely. Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment D: Unlikely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment E: Unlikely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment.

Nevin's Barberry

Nevin's barberry (*Berberis nevinii*) is a yellow-flowered evergreen rhizomatous shrub in the Barberry Family (Berberidaceae). It reaches three to 12 feet in height and resprouts vigorously after fire. It blooms from March to June (CNPS 2010). Nevin's barberry grows in small, discrete, localized populations in two habitat types: sandy and gravelly places along the margins of dry washes, and coarse soils in chaparral. It ranges from 900 to 2,700 feet in elevation (Hickman 1993, USFS 2005). This species appears to have low rates of reproduction due to sporadic production of viable seed (USFS 2005). Nevin's barberry is federally and state listed as endangered (CDFG 2010), and placed on List 1B.1 by the CNPS (CNPS 2010). Threats to the species include naturally small population sizes, wildfire, fire suppression activities, and illegal trash dumping (USFS 2005, CNPS 2010).

Nevin's barberry is endemic to southern California, and has been documented in Los Angeles, San Bernardino, and Riverside Counties. Its range extends from the foothills of the San Gabriel Mountains to the foothills of the Santa Ana and Palomar Mountains (USFS 2005). The CNDDB (CDFG 2008a) lists 39 occurrences for this species. The USFS (2005) estimated that the total population size was between 500 and 1,000 plants.

In 2005, there were two confirmed occurrences totaling 138 acres within the ANF, in San Francisquito and Lopez canyons. There is a known population of this species near LADWP Power Plant # 2 in San Francisquito Canyon which is adjacent to Segment G. Based on its geographic range and habitat preferences, Nevin's barberry has a likely potential to occur on segments B, C, D, E, G, H, I, J, K, and 2a; and a possible potential to occur on segments A and 115. No individuals of this species were found during botanical surveys conducted for this project in 2008 and 2009 on ANF lands. **Segments in which Nevin's barberry may occur are described below.**

Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment D: Likely. Suitable habitat exists in Chamise Chaparral, Mojave Mixed Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment E: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment G: Likely. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Likely. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment I: Likely. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment K: Likely. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment 115: Possible. Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Thread leaved Brodiaea

Thread leaved brodiaea (*Brodiaea filifolia*) is a violet-, red-, or purple-flowered perennial herb in the Onion Family (Liliaceae). Thread-leaved brodiaea occurs from San Luis Obispo County south to San Diego County in chaparral, cismontane woodland, coastal scrub, playas, valley and foothill grassland and along the margins of vernal pools. Thread-leaved brodiaea blooms March through June from 75 to 3,660 feet elevation typically in clay soils. Thread-leaved brodiaea is federally and state listed as endangered (CDFG 2009b), and placed on List 1B.1 by the CNPS (CNPS 2009). This species has designated critical habitat on the Angeles National Forest. Thread-leaved brodiaea is seriously threatened by residential development, agriculture, grazing, non-native plants, off road vehicles, and road construction (CNPS 2009).

Based on range and habitat preferences, thread-leaved brodiaea is expected to be absent on all segments. It requires a very specific heavy clay soil for growing that is not present within the Project area. No locations for this species are known from the project vicinity. No individuals of this species were observed during 2008 or 2009 botanical surveys within ANF lands of the project area.

Round-leaved Filaree

Round-leaved filaree (*California macrophylla*) is an annual white-flowered herb occurring from Shasta County south through most of the coastal California counties. It blooms from March to May and occurs in open sites, grassland, and scrub associated with cismontane woodlands and valley and foothill grasslands, in clay soils from 49 to 3,937 feet (CNPS 2010). It is on List 1B.1 by the CNPS, indicating that it is rare, threatened, or endangered in California and elsewhere and seriously endangered in California (CNPS 2010, CDFG 2010). Round-leaved filaree is threatened by urbanization, habitat alteration, vehicles, pipeline construction, feral pigs, and non-native plants, and is potentially threatened by grazing (CNPS 2010).

Based on range and habitat preferences, round-leaved filaree has a likely potential to occur on segments B, D, E, F, G, H, I, 115, and 2a. There is limited suitable habitat available in the Project area, and while multiple populations are recorded within one mile of the Project (CDFG 2010), this species was not observed during 2008 or 2009 botanical surveys. **Segments in which round-leaved filaree may occur are described below.**

Segment B: Likely. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment.
Segment D: Likely. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment.
Segment E: Likely. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment.
Segment F: Likely. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment.
Segment G: Likely. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Likely. Suitable habitat exists in California Annual Grassland and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment I: Likely. Suitable habitat exists in California Annual Grassland and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment 115: Likely. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment.
Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Club-haired Mariposa Lily

Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*) is a yellow-flowered bulbiferous herb in the Lily Family (Liliaceae) that blooms during May to June. It is on CNPS List 4.3 and associated with serpentine soils of chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland at elevations of 245 to 4,265 feet (Hickman 1993, CNPS 2010).

Based on range and habitat preferences, club-haired mariposa lily has a possible potential to occur on all segments. No individuals of this species were observed during 2008 or 2009 botanical surveys within ANF lands of the project area. **Segments in which club-haired mariposa lily may occur are described below.**

Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment B: Possible. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment C: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment D: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Possible. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment F: Possible. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment.
Segment G: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 115: Possible. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Slender Mariposa Lily

Slender mariposa lily (*Calochortus clavatus* var. *gracilis*) is a bulbiferous herb in the Lily Family (Liliaceae). This species has yellow flowers that are reddish-brown at the base and it blooms during March to June (CNPS 2010). It occurs in shaded foothill canyons associated with chaparral, coastal scrub, and valley and foothill grassland, at elevations of 1,200 to 3,330 feet (Hickman 1993, CNPS 2010). It is on CNPS List 1B.2 and is a Forest Sensitive species. Slender mariposa lily is threatened by development, mining, non-native plants, and vehicles. There are 54 occurrences of this species rangewide, all in Los Angeles and Ventura Counties (CDFG 2010).

This species is known to occur on project segments D, G, H, I, and J. In the 2008 and 2009 surveys conducted for this Project, slender mariposa lily was found in 119 locations on Segments G, H, and I in recently burned chaparral, coastal scrub, and grassland vegetation. Based on range and habitat preferences, slender mariposa lily has a likely potential to occur on Segments K and 2a and a possible potential to occur on Segments A and 115. Although several segments in the Antelope Valley and Mojave Desert contain suitable habitat and suitable elevation range, this species is not known to be present north of the Transverse Range and is unlikely to occur (Aspen 2009, USFS 2010a). **Segments in which slender mariposa lily occurs or may occur are described below.**

Segment A: Unlikely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; segment is outside of species' known range and species is not known within 10 miles of segment.
Segment B: Unlikely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; species is known within 10 miles of segment; but species is not known north of the Transverse Ranges (Aspen 2009, USFS 2010a).
Segment C: Unlikely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; species is known within 10 miles of segment; but species is not known north of the Transverse Ranges (Aspen 2009, USFS 2010a).
Segment D: Present. Species known within segment corridor. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Mixed Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment E: Unlikely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; species is known within 10 miles of segment; but species is not known north of the Transverse Ranges (Aspen 2009, USFS 2010a).
Segment F: Unlikely. Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; species is not known within 10 miles of segment; but species is not known north of the Transverse Ranges (Aspen 2009, USFS 2010a).
Segment G: Present. Species known within segment corridor. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Present. Species known within segment corridor. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment I: Present. Species known within segment corridor. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment J: Present. Species known within segment corridor. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment K: Likely. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment 115: Possible. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; species is known within 10 miles of segment; but species is not known north of the Transverse Ranges (Aspen 2009, USFS 2010a).
Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Palmer's Mariposa Lily

Palmer's mariposa lily (*Calochortus palmeri* var. *palmeri*) is a bulb-forming herb in the Lily Family (Liliaceae). Habitat for Palmer's mariposa lily includes meadows, seeps, and vernally moist areas in chaparral, mixed conifer forest, and yellow pine forest at elevations of 3,300 to 7,200 feet (Hickman 1993, USFS 2005, CNPS 2010). It has white to lavender flowers and blooms from April to July. Palmer's mariposa lily appears to have an "endurer" life history strategy for coping with wildfire, with most bulbs able to survive fire and to produce enough seed by the second year after the fire to increase reproductive output (USFS 2005).

It is not federally or state listed, but is included in the CNPS Inventory (2008) on List 1B.2. In addition, it is considered a "sensitive" species by the USFS. Potential threats include overgrazing, trampling, flooding, erosion, off-highway vehicles, and development projects (USFS 2005). Palmer's mariposa lily is most vulnerable to impacts from grazing between April and August, when the plant is flowering and setting seed. All *Calochortus* species are vulnerable to removal by collectors, and rare species such as this are vulnerable to extirpation as a result (USFS 2005).

Palmer's mariposa lily is endemic to southern California. It has been documented in mountainous areas of San Luis Obispo, Santa Barbara, Ventura, Los Angeles, Kern, San Bernardino, and Riverside Counties (CNPS 2010). The CNDDB (CDFG 2008a) lists 35 occurrences, of which most are in San Bernardino County, and one is from the ANF in Los Angeles County. According to the USFS (2005), occurrences in the ANF include Mystic Canyon and Little Rock Creek in the San Gabriel Mountains, and west of the Angeles Crest. None of these are in the vicinity of the Project area.

Based on range and habitat preferences, Palmer's mariposa lily has a likely potential to occur on segment G; a possible potential to occur on segments D, H, I, and 2a; and an unlikely potential to occur on segments J and K. No individuals of this species were observed during 2008 or 2009 botanical surveys within ANF lands of the project area. **Segments in which Palmer's mariposa lily may occur are described below.**

Segment D: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment G: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment K: Unlikely. Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Plummer's Mariposa Lily

Plummer's mariposa lily (*Calochortus plummerae*) is a pink-flowered bulb-forming herb in the Lily Family (Liliaceae). It grows on rocky, granitic soils, or on gravelly alluvium, usually in chaparral or coastal sage scrub habitats, and less often in grasslands, alluvial fan sage scrub, oak woodland, or Ponderosa pine woodland (USFS 2005). It ranges from 325 to 5,580 feet in elevation. It is not federally or state listed, but is included on List 1B.2 of the CNPS Inventory (CNPS 2010). It blooms from May to July (CNPS 2010). Plummer's mariposa lily is threatened by development projects, trail construction and maintenance, fire suppression, habitat conversion, trampling, and sand and gravel mining (USFS 2005), and possibly threatened by invasive non-native plants (CNPS 2010). All *Calochortus* species are vulnerable to removal by collectors, and rare species such as this are vulnerable to extirpation as a result (USFS 2005).

Plummer's mariposa lily is endemic to southern California. It has been documented in mountain ranges in Los Angeles, Orange, Riverside, San Bernardino and Ventura Counties. The CNDDB (CDFG 2008a) lists 103 occurrences for this species. Most of these are in San Bernardino, Los Angeles, and Riverside

Counties. Most occurrences within the ANF are from the San Gabriel Mountains (USFS 2005). The only occurrence listed by CNDDB (CDFG 2008a) in the vicinity of the Project area is a non-specific historic record from 1897 near Newhall.

Based on range and habitat preferences, Plummer's mariposa lily has a likely potential to occur on segments B, C, D, E, G, H, I, J, and K; and a possible potential to occur on segments A, F, 115, and 2a. Suitable habitat is found within chaparral and grassland vegetation, but there are no recent observations of this species in the vicinity of the Project area. No individuals of Plummer's mariposa lily were observed during 2008 or 2009 protocol-level surveys within ANF lands of the Project area. **Segments in which Plummer's mariposa lily may occur are described below.**

Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment D: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Mixed Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment E: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment F: Possible. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment.
Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment I: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment K: Likely. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment 115: Possible. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Alkali Mariposa Lily

Alkali mariposa lily (*Calochortus striatus*) is a pink-flowered bulb-forming herb in the Lily Family (Liliaceae). It blooms from April to June (CNPS 2010). It grows in seasonally moist alkaline habitats such as alkali meadows, ephemeral washes, vernally moist depressions, and at seeps within saltbush and Mojave Creosote Bush scrub, in calcareous sandy soil, from 300 to 4,500 feet in elevation (Hickman 1993, USFS 2005). Alkali mariposa lily has not been found in soils with surface salts, or in wetter areas with permanent standing surface water. The bulb remains dormant and does not sprout in dry years (USFS 2005). It is not federally or state listed, but is included on List 1B.2 of the CNPS Inventory (CNPS 2010), and is considered a "sensitive" species by the USFS and BLM.

Potential threats to alkali mariposa lily include grazing, development, altered hydrology, trampling, road construction and collecting (CNPS 2010). All *Calochortus* species are vulnerable to removal by collectors, and are vulnerable to extirpation as a result (USFS 2005). Alkali mariposa lily is associated with mesic soils in the desert, and is therefore highly vulnerable to habitat loss and degradation resulting from water diversions that affect hydrology (USFS 2005).

Alkali mariposa lily is restricted to mesic alkaline sites in southern California, where it is known from Tulare, Kern, Los Angeles, and San Bernardino Counties (CNPS 2010). It also occurs in southern Nevada. In California it has been documented in the southern Sierra Nevada, the western, central, and southern Mojave Desert, the north base of the San Bernardino Mountains, and the southern San Joaquin Valley. The CNDDB (CDFG 2008a) lists 90 occurrences for alkali mariposa lily. There are no confirmed records of alkali mariposa lily on National Forest System lands; a record from Pinyon Flats in the ANF is likely a misidentification (USFS 2005).

Based on range and habitat preferences, alkali mariposa lily has a likely potential to occur on segments A, B, C, E, G, H, I, K, and 2a; and a possible potential to occur on segments D and J. No individuals of this species were observed during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which alkali mariposa lily may occur are described below.**

Segment A: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment B: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment C: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment D: Possible. Suitable habitat exists in Joshua Tree Woodland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment G: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Likely. Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral elevation is appropriate; and species is known within 10 miles of segment.
Segment I: Likely. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment J: Possible. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Likely. Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Late-flowered Mariposa Lily

Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*) is a pink-flowered bulb-forming herb in the Lily Family (Liliaceae). It grows in open, dry, rocky sites in cismontane and riparian woodlands, from 880 to 6,250 feet in elevation (CNPS 2010). It is often found on serpentine substrates, but may also occur on sandstone, siltstone and shale substrates (USFS 2005). Key habitat elements include rocky, open sites with reduced competition from other plants, suggesting a low tolerance of disturbance or a lack of ability to compete with other plants (USFS 2005). Late-flowered mariposa lily appears to cope with wildfire through an "endurer" life history strategy; most bulbs survive fire, and the plants produce enough seed in the second year following fire to result in an increase in reproductive output (USFS 2005).

Late-flowered mariposa lily is not federally or state listed. It is on List 1B.2 of the CNPS Inventory (CNPS 2010), and is considered "sensitive" by the USFS. It flowers from June to August (CNPS 2010). Potential threats include risk from road and fuel break maintenance, fire suppression, grazing, and housing development on private lands (USFS 2005, CNPS 2010). Late-flowered mariposa lily is endemic to coastal southern California. Locations have been documented in Monterey, San Luis Obispo, Santa Barbara, and Ventura Counties (CNPS 2010). There are no documented locations for Los Angeles County or the ANF (CNPS 2010, CDFG 2008a).

Based on range and habitat preferences, late-flowered mariposa lily has a possible potential to occur on segments D, G, H, I, J, K, 115, and 2a. There are no known locations for this species within Los Angeles County or the ANF. This species was not found during the 2008 or 2009 protocol-level surveys conducted for this Project. **Segments in which late-flowered mariposa lily may occur are described below.**

Segment D: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Possible. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Possible. Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 115: Possible. No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Peirson's Morning Glory

Peirson's morning glory (*Calystegia peirsonii*) is a white-flowered rhizomatous herb in the Morning Glory Family (Convolvulaceae) that blooms during April to June (CNPS 2010). This species grows on rocky slopes in chaparral, chenopod scrub, cismontane woodland, coastal scrub, lower montane coniferous forest, and valley and foothill grassland at elevations of 1,000 to 4,500 feet (Hickman 1993, CNPS 2010). Peirson's morning glory is on CNPS List 4.2 and is threatened by grazing, development, and possible power line construction (CNPS 2010). There are 26 occurrences of this species, all in Los Angeles County (CDFG 2010).

Peirson's morning glory is known to occur within segment H. Based on range and habitat preferences, Peirson's morning glory has a likely potential to occur on segments B, C, D, E, F, G, I, J, K, 115, and 2a; and a possible potential to occur on segment A. **Segments in which Peirson's morning glory may occur are described below.**

Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment D: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment E: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment F: Likely. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment.
Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Present. Species known within segment corridor. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment I: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment K: Likely. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment 115: Likely. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

White Pygmy Poppy

White pygmy poppy (*Canbya candida*) is a diminutive annual herb in the Poppy Family (Papaveraceae) that blooms from March through May (occasionally June). It is the only species of the genus *Canbya* in California and is easily distinguished from other members of the Poppy Family by its tiny white radial flowers with 6 petals, 6-9 yellow anthers, and basal, entire, linear leaves (Hickman 1993). White pygmy poppy is a CNPS List 4.2, USFS Sensitive, and BLM Plant of Interest (USFS 2007, CNPS 2010). White pygmy poppy is threatened by development, vehicles, grazing, mining, and non-native plants (CNPS 2010).

White pygmy poppy occurs in the western Mojave Desert adjacent to the Sierra Nevada Mountains in Imperial, Kern, Inyo, San Bernardino and Los Angeles Counties. White pygmy poppy may be found in sandy, gravelly or granitic soils in Joshua Tree Woodland, Mojavean desert Scrub, and Pinyon-Juniper Woodland from 1970 to 3940 feet (Hickman 1993, CNPS 2010). The nearest known occurrence is in the San Fernando USGS Quadrangle near the interchange of I-5 and 210 (CalFlora 2010). White pygmy poppy was not observed within the survey area and is not known to occur in the project vicinity.

Based on range and habitat preferences, white pygmy poppy has a likely potential to occur on segments A, B, C, E, and I; and a possible potential to occur on segment D. This species was not found during the 2008 or 2009 protocol-level surveys conducted for this Project. **Segments in which white pygmy poppy may occur are described below.**

Segment A: Likely. Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment B: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment C: Likely. Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment D: Possible. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.

Segment I: Possible. While suitable habitat is not known on this segment according to GAP data, it is likely that small patches of habitat may be present in the northern portions; elevation is appropriate; and species is known within 10 miles of segment.

Mojave Indian Paintbrush

Mojave Indian paintbrush (*Castilleja plagiotoma*) is a hemiparasitic perennial herb in the Figwort Family (Scrophulariaceae). This species has pale yellow, white woolly flowers and blooms during April to June. It is associated with Great Basin scrub, Joshua tree woodland, lower montane coniferous forest, and pinyon and juniper woodland at elevations of 1,000 to 8,325 feet. It is on CNPS List 4.3 and a Forest Sensitive species and is threatened by recreational and road activities (CNPS 2010).

Based on range and habitat preferences, Mojave Indian paintbrush has a possible potential to occur on segments A, B, C, D, E, and I. This species was not found during the 2008 or 2009 protocol-level surveys conducted for this Project. **Segments in which Mojave Indian paintbrush may occur are described below.**

Segment A: Possible. Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment.
Segment B: Possible. Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment.
Segment C: Possible. Suitable habitat exists in Joshua Tree Woodland and Rabbitbrush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment D: Possible. Suitable habitat exists in Joshua Tree Woodland and Rabbitbrush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Possible. Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. While suitable habitat is not known on this segment according to GAP data, it is likely that small patches of habitat may be present in the northern portions; elevation is appropriate; and species is not known within 10 miles of segment.

Southern Tarplant

Southern tarplant (*Centromadia parryi* ssp. *australis*) is a yellow-flowered annual herb in the Sunflower Family (Asteraceae) that blooms during May to November. This species is associated with vernally moist saline grasslands, marshes and swamps, valley and foothill grassland (vernally mesic), and vernal pools, at elevations of 0 to 1401 feet (Hickman 1993, CNPS 2010). It is a CNPS List 1B.1 species and is threatened by urbanization, vehicles, development, foot traffic, grazing, habitat disturbance, and competition from non-native plants. There are 76 occurrences known rangewide and is known to the projects counties of Los Angeles (CDFG 2010).

Based on range and habitat preferences, southern tarplant has a likely potential to occur on segments G and I; a possible potential to occur on segments B, D, E, and H; and an unlikely potential to occur on segments F and 115. This species was not found during the 2008 or 2009 protocol-level surveys conducted for this Project. **Segments in which southern tarplant may occur are described below.**

Segment B: Possible. Suitable habitat exists in California Annual Grassland; elevation is not appropriate; species is known within 10 miles of segment.
Segment D: Possible. Suitable habitat exists in California Annual Grassland; elevation is appropriate; species is not known within 10 miles of segment.
Segment E: Possible. Suitable habitat exists in California Annual Grassland; elevation is not appropriate; species is known within 10 miles of segment.
Segment F: Unlikely. Suitable habitat exists in California Annual Grassland; elevation is not appropriate; species is not known within 10 miles of segment.

Segment G: Likely. Suitable habitat exists in California Annual Grassland; elevation is appropriate; species is known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in California Annual Grassland; elevation is appropriate; species is not known within 10 miles of segment.
Segment I: Likely. Suitable habitat exists in California Annual Grassland; elevation is appropriate; species is known within 10 miles of segment.
Segment 115: Unlikely. Suitable habitat exists in California Annual Grassland; elevation is not appropriate; species is not known within 10 miles of segment.

San Fernando Valley Spineflower

San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*) is a white-flowered annual herb in the Buckwheat Family (Polygonaceae) that blooms from April to July (CNPS 2010). It occurs in sandy places associated with coastal scrub and valley and foothill grassland, from 490 to 4,000 feet (Hickman 1993, CNPS 2010, USFS 2005). San Fernando Valley spineflower is a candidate for federal listing, and is state-listed as endangered (CDFG 2008a). The CNPS online Inventory (CNPS 2010) includes it on List 1B.1, and the USFS tracks it as a "sensitive" species. Threats include urban development on private land and invasive non-native plants (CNPS 2010).

San Fernando Valley spineflower is endemic to the Los Angeles Basin and neighboring valleys and mesas (CNPS 2010, USFS 2005). Most of its former range in Los Angeles and Orange Counties has been developed. The CNDDB (CDFG 2008a) lists 15 occurrences for this species, of which six are noted as *presumed extant* and the other nine are noted as *possibly extirpated*. Five of the presumed extant locations are within the vicinity of the Project area (e.g., Newhall Ranch, Castaic, and Magic Mountain). There are no known or historic locations for San Fernando Valley spineflower from ANF lands.

Based on range and habitat preferences, San Fernando Valley spineflower has a likely potential to occur on segments B, C, D, E, G, H, I, J, K, and 115; and a possible potential to occur on segment A. Several locations where this species is presumed to occur are known from the vicinity of the Project area. San Fernando Valley spineflower was not found during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which San Fernando Valley spineflower may occur are described below.**

Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment D: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment E: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment G: Likely. Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Likely. Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment I: Likely. Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment J: Likely. Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment K: Likely. Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.

Segment 115: Likely. Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.

Parry's Spineflower

Parry's spineflower (*Chorizanthe parryi* var. *parryi*) is a white-flowered annual herb in the Buckwheat Family (Polygonaceae) that flowers from April to June (CNPS 2010). It occurs in sandy places associated with coastal sage scrub, chaparral, alluvial wash scrub, and the ecotone between chaparral and oak woodland, from 100 to 3,700 feet in elevation (Hickman 1993, CNPS 2010, USFS 2005). Parry's spineflower is not federally or state listed, but is included on List 1B.1 on the CNPS online Inventory (CNPS 2010) and is a USFS "sensitive" species. Parry's spineflower is threatened by altered hydrologic regimes, development, mining, and vehicles (CNPS 2010).

Parry's spineflower is endemic to southern California, where it has been documented in alluvial fans and terraces in San Bernardino, Riverside, Los Angeles, and Orange Counties (CNPS 2010, CDFG 2008a). The CNDDB (CDFG 2008a) lists 40 occurrences; most of these are from Riverside and San Bernardino Counties. There are no documented occurrences from ANF lands (CDFG 2008a).

Based on range and habitat preferences, Parry's spineflower has a likely potential to occur on segments B, C, D, E, G, H, I, J, K, and 2a; and a possible potential to occur on segments A and 115. Some possibly suitable habitat occurs in scrub and chaparral within the Project area. However, there are no known locations within the vicinity of the Project area. No individuals of this species were found during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which Parry's spineflower may occur are described below.**

Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment D: Likely. Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment E: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment G: Likely. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Likely. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment I: Likely. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment K: Likely. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment 115: Possible. Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

White-bracted Spineflower

White-bracted spineflower *(Chorizanthe xanti* var. *leucotheca*) is a rose- to red-flowered annual herb in the Knotweed Family (Polygonaceae) that blooms during April to June. This species is associated with desert scrub habitats of Mojavean desert scrub and pinyon and juniper woodland at elevations of 984 to 3,937 feet. It is a CNPS List 1B.2 species and is threatened by development, flood control projects, mining, and vehicles (CNPS 2010). There are 15 occurrences in California, one which is in any of the project counties (Los Angeles County; CDFG 2010).

Based on range and habitat preferences, white-bracted spineflower has a likely potential to occur on segments B, C, and E; a possible potential to occur on segment A; and an unlikely potential to occur on segment D. There are no known locations within the vicinity of the Project area. No individuals of this species were found during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which white-bracted spineflower may occur are described below.**

Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment D: Unlikely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.

Desert Cymopterus

Desert cymopterus (*Cymopterus deserticola*) is a small perennial herb in the Carrot Family (Apiaceae) that blooms from March to May. The flowers have a purple corolla, and the plant is glabrous and may be distinguished from its congeners by having unequal fruit wings and by being sessile on its taproot, having no stem, sending its petioles (holding the leaves) and peduncles (bearing the flowers) straight out from the sand. It occurs in sandy desert habitats and is associated with Joshua tree woodland and Mojavean desert scrub from 2,000–5,000 feet in elevation (Hickman 1993, CNPS 2010).

The desert cymopterus is not federally or state listed species. It is included on CNPS List 1B.2 (CNPS 2009) meaning it is fairly endangered in California. It is also considered a sensitive plant species by the BLM. Threats to species include military activities, sheep grazing, vehicles, utility construction, and urbanization (CNPS 2009). Desert cymopterus is endemic to Kern, Tehama, Los Angeles, and San Bernardino Counties. The CNDDB (CDFG 2009b) lists 79 occurrences for this species in California.

Based on range and habitat preferences, desert cymopterus has a possible potential to occur on segments A, B, C, D, and E. There is an occurrence of this species from the Edwards Air Force Base (CDFG 2009b). No individuals of desert cymopterus were observed during 2009 surveys conducted for this project on federal lands. **Segments in which desert cymopterus may occur are described below.**

Segment A: Possible. Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment B: Possible. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment C: Possible. Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment D: Possible. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.

Segment E: Possible. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.

Red Rock Tarplant

Red Rock tarplant (*Deinandra arida*) is a yellow-flowered annual herb in the Sunflower Family (Asteraceae) that blooms from April to November. It is associated with clay soils and volcanic tuff of washes in Mojavean desert scrub, at elevations of 984 to 3,117 feet (Hickman 1993, CNPS 2010). It is a CNPS List 1B.2 and BLM SS species and is known from six occurrences near Red Rock Canyon in the Mojave desert, all in Kern County.

Based on range and habitat preferences, Red Rock tarplant has a likely potential to occur on segments A, B, C, and E; and a possible potential to occur on segment D. No individuals of Red Rock tarplant were observed during 2009 surveys conducted for this project on federal lands. **Segments in which Red Rock tarplant may occur are described below.**

Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment D: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.

Santa Susana Tarplant

Santa Susana tarplant (*Deinandra minthornii*) is a yellow-flowered deciduous shrub in the Sunflower Family (Asteraceae) that blooms during July to November. It is often on sandstone substrates and associated with chaparral and coastal scrub, at elevations of 919 to 2,493 feet. It is a CNPS List 1B.2 species and is threatened by development and possibly by non-native plants (CNPS 2010). There are 35 occurrences, all located in the project counties of Los Angeles and Ventura (CDFG 2010).

Based on range and habitat preferences, Santa Susana tarplant has a likely potential to occur on segment G; and a possible potential to occur on segments D, H, I, J, K, 115, and 2a. No individuals of Santa Susana tarplant were observed during 2009 surveys conducted for this project on federal lands. **Segments in which Santa Susana tarplant may occur are described below.**

Segment D: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment G: Likely. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment 115: Possible. Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Mojave Tarplant

Mojave tarplant (*Deinandra mohavensis*) is an annual herb in the Sunflower Family (Asteraceae) that blooms from July to September. It is distinguished from other members of the genus *Deinandra* by its lack of spines on the leaves, yellow anthers, lanceolate upper leaves and whitish stems. Other distinct taxonomic features include five ray flowers, six disk flowers, linear phyllaries, a dense inflorescence and sub-entire basal leaves (Hickman 1993). Mojave tarplant is state listed as endangered.

It is a CNPS List 1B.3, USFS Sensitive, and BLM SS species (USFS 2007, CNPS 2010). Mojave tarplant is threatened by development, grazing, hydrological alterations, recreational activities, road maintenance, and vehicles (CNPS 2010). Mojave tarplant is endemic to Kern, Riverside, San Bernardino and San Diego counties in chaparral and scrub (CNPS 2010). According to CalFlora 2010, 72 populations of Mojave tarplant have been documented in eastern southern California (CDFG 2010). Populations nearest to the project area occur in Kern County between Lancaster and Ridgecrest and in San Bernardino County near Apple Valley.

Based on range and habitat preferences, Mojave tarplant has a likely potential to occur on segments A, B, C, E, and G; a possible potential to occur on segments D, H, I, J, 115, and 2a; and an unlikely potential to occur on segment K. No individuals of Mojave tarplant were observed during 2009 surveys conducted for this project on federal lands. **Segments in which Mojave tarplant may occur are described below.**

Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment D: Possible. Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment G: Likely. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Unlikely. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment 115: Possible. Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Slender-horned Spineflower

Slender-horned spineflower (*Dodecahema leptoceras*) is a pink-flowered annual herb in the Buckwheat Family (Polygonaceae) that blooms from April to June (CNPS 2010). Slender-horned spineflower grows on sandy soils of alluvial fans and stream terraces within chaparral, cismontane woodland and coastal scrub from 650 to 2,500 feet (Hickman 1993, CNPS 2010). Most occurrences are on flood-deposited river terraces associated with later successional stages of alluvial scrub habitat (USFS 2005). It is federally and state listed as endangered. The CNPS online Inventory (CNPS 2010) includes it on List 1B.1. Current threats include alteration of fire regimes, development, sand and gravel mining, flood control, foot traffic, proposed reservoir construction, recreational activities, vehicles, and invasive non-native plants (CNPS 2010).

Slender-horned spineflower is endemic to the coastal sides of the Transverse and Peninsular ranges in Los Angeles, Riverside, and San Bernardino Counties. The CNDDB (CDFG 2008a) lists 34 occurrences, most in Riverside and San Bernardino Counties. A portion of one occurrence, in Big Tujunga Wash, may extend into the southern part of the ANF (CDFG 2008a). One historic location, from 1893, is known from a non-specific location in the vicinity of Newhall; this location is in the vicinity of the Project area (CDFG 2008a). Many historical occurrences of slender-horned spineflower were lost to urbanization and stream channelization.

Based on current range and habitat preferences, slender-horned spineflower has a likely potential to occur on segments B, C, D, E, G, H, I, J, K, and 2a; and a possible potential to occur on segments A, F, and 115. Marginally suitable habitat may occur within chaparral and scrub habitat within the Project area. One historic location (1893) is known from the vicinity of the Project area. No individuals of slender-horned spineflower were located during 2008 and 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which slender-horned spineflower may occur are described below.**

Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment D: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment E: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment F: Possible. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment.
Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment I: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment K: Likely. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment 115: Possible. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Blochman's Dudleya

Blochman's dudleya *(Dudleya blochmaniae* ssp. *blochmaniae)* is a perennial herb in the Stonecrop Family (Crassulaceae). It has white, often red-lined flowers that bloom during April to June. This species occurs on open, rocky slopes that are often comprised of clay or serpentine soils (Hickman 1993). It is associated with coastal bluff scrub, chaparral, coastal scrub, and valley and foothill grassland, at elevations of 16 to 1,476 feet. It is a CNPS List 1.B1 species and is threatened by development and non-native plants (CNPS 2010). There are 41 occurrences in California, seven which are in Ventura or Los Angeles counties (CDFG 2010).

Based on current range and habitat preferences, Blochman's dudleya has a likely potential to occur on segments G and K; a possible potential to occur on segments B, D, E, H, I, and J; and an unlikely potential to occur on segments F, 115, and 2a. No individuals of Blochman's dudleya were located during 2008 and 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which Blochman's dudleya may occur are described below.**

Segment B: Possible. Suitable habitat exists in California Annual Grassland; elevation is not appropriate; and species is known within 10 miles of segment.
Segment D: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Possible. Suitable habitat exists in California Annual Grassland; elevation is not appropriate; and species is known within 10 miles of segment.
Segment F: Unlikely. Suitable habitat exists in California Annual Grassland; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Likely. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment 115: Unlikely. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment 2a: Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

San Gabriel River Dudleya

San Gabriel River dudleya (*Dudleya cymosa* ssp. *crebrifolia*) is a perennial herb in the Stonecrop Family (Crassulaceae). It has mustard yellow flowers and blooms during April to July. It occurs on granitic slopes and is associated with chaparral habitats at elevations of 915 to 1,415 feet (Hickman 1993, CNPS

2010). It is a CNPS List 1B.2 and Forest Sensitive species. This species is threatened by mining and is only known from one occurrence near the San Gabriel River in Los Angeles County (CDFG 2010, CNPS 2010).

Based on current range and habitat preferences, San Gabriel River dudleya is unlikely to occur on segments D, G, H, I, J, K, and 2a. No individuals of San Gabriel River dudleya were located during 2008 and 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which San Gabriel River dudleya may occur are described below.**

Segment D: Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment G: Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment H: Unlikely. Marginal habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Unlikely. Marginal habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Unlikely. Marginal habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Unlikely. Marginal habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Unlikely. Marginal habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

San Gabriel Mountains Dudleya

San Gabriel Mountains dudleya (*Dudleya densiflora*) is a white- or pink-flowered perennial herb in the Stonecrop Family (Crassulaceae) that blooms during March to July. It occurs on steep, granitic cliff and canyon walls and is associated with chaparral, coastal scrub, lower montane coniferous forest (Hickman 1993, CNPS 2010). It is a CNPS List 1B.1 and Forest Sensitive species that is threatened by mining, development, and possible horticultural collecting. There are six occurrences in California, all in Los Angeles County (CDFG 2010).

Based on current range and habitat preferences, San Gabriel Mountains dudleya has a possible potential to occur on segments D, G, H, J, and K; and an unlikely potential to occur on segments A, B, C, E, F, 115, and 2a. No individuals of San Gabriel Mountains dudleya were located during 2008 and 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which San Gabriel Mountains dudleya may occur are described below.**

Segment A: Unlikely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment B: Unlikely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment C: Unlikely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment D: Possible. Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Unlikely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment F: Unlikely. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.

Segment G: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 115: Unlikely. Suitable habitat exists in Riversidian Sage Scrub; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment 2a: Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Many-stemmed Dudleya

Many-stemmed dudleya (*Dudleya multicaulis*) is a yellow-flowered succulent perennial herb in the Stonecrop Family (Crassulaceae) that blooms from April to July (CNPS 2010). It is associated with open sites within chaparral, coastal scrub, and valley and foothill grassland, in dry stony soils, often with high clay content, from 45 to 2,590 feet in elevation (Hickman 1993, CNPS 2010, USFS 2005). Many-stemmed dudleya is not federally or state listed, but is on List 1B.2 of the CNPS online Inventory (CNPS 2010) and is a USFS "sensitive" species. Many-stemmed dudleya is seriously threatened by development, road construction and maintenance, fire suppression, invasive non-native plants, mining, grazing, and recreation (CNPS 2010).

Many-stemmed dudleya is endemic to the coastal and foothill areas of Los Angeles, Orange, western San Bernardino, western Riverside, and San Diego Counties. The CNDDB (CDFG 2008a) lists 111 occurrences for this species; most of these are on private land in Orange County. There are no known localities on the ANF (USFS 2005).

Based on current range and habitat preferences, many-stemmed dudleya has a likely potential to occur on segments B, C, E, G, and K; and a possible potential to occur on segments A, D, F, H, I, J, 115, and 2a. Marginally suitable habitat may occur within chaparral habitat within the Project area; however, there are no known locations within the vicinity of the Project area. No individuals of many-stemmed dudleya were observed during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which many-stemmed dudleya may occur are described below.**

Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment D: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment F: Possible. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment.

Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Likely. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment 115: Possible. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Tehachapi Buckwheat

Tehachapi buckwheat (*Eriogonum callistum*) is a perennial herb in the Knotweed Family (Polygonaceae). This species has pink-white flowers in bud that become white with age and blooms during May to July. It occurs on open limestone outcrops and ridges in chaparral habitats, at elevations of 4,593 to 4,921 feet (Hickman 1993, CNPS 2010). It is a CNPS List 1.B1 species and is possible threatened by energy and urban development (CNPS 2010). There is only one occurrence of this species in California, in Kern County (CDFG 2010).

Based on current range and habitat preferences, Tehachapi buckwheat has a possible potential to occur on segments D, G, H, I, and 2a; and an unlikely potential to occur on segments J and K. No individuals of Tehachapi buckwheat were observed during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which Tehachapi buckwheat may occur are described below.**

Segment D: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is known within 10 miles of segment.
Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment K: Unlikely. Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Kern Buckwheat

Kern buckwheat (*Eriogonum kennedyi* var. *pinicola*) is a white- to rose-flowered perennial herb in the Knotweed Family (Polygonaceae) that blooms during May to June. It occurs on dry ridges and is associated with chaparral and pinyon and juniper woodland habitats, at elevations of 4,396 to 6,398 feet (Hickman 1993, CNPS 2010). This species is on CNPS List 1.B1 and is a BLM SS species. It is threatened by wind energy development and vehicles (CNPS 2010). There are three occurrences of this species in California, all in Kern County (CDFG 2010).

Based on current range and habitat preferences, Kern buckwheat has a possible potential to occur on segments G, H, I, and 2a; and an unlikely potential to occur on segments D, J, and K. No individuals of Kern buckwheat were observed during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which Kern buckwheat may occur are described below.**

Segment D: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment K: Unlikely. Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Barstow Woolly Sunflower

Barstow woolly sunflower (*Eriophyllum mohavense*) is an annual herb in the Sunflower Family (Asteraceae). This species generally has yellow flowers (sometimes white) and blooms during April to May. It is associated with chenopod scrub, Mojavean desert scrub, and playa habitats at elevations of 1,640 to 3,150 feet. It is a CNPS List 1B.2 and BLM SS species and is threatened by energy development, road improvements, grazing, and vehicles (CNPS 2010). There are 56 occurrences in California, 13 which are in the project county of Kern (CDFG 2010).

Based on current range and habitat preferences, Barstow woolly sunflower has a likely potential to occur on segments A, B, C, and E; and a possible potential to occur on segment D. No individuals of Barstow woolly sunflower were observed during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which Barstow woolly sunflower may occur are described below.**

Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment D: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.

Red Rock Poppy

Red Rock poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*) is a yellow-flowered annual herb in the Poppy Family (Papaveraceae) that blooms during March to May. It occurs on desert washes, flats, and slopes and is associated with Mojavean desert scrub habitat at elevations of 2,231 to 4,035 feet (Hickman

1993, CNPS 2010). It is a CNPS List 1B.2 and BLM SS species and is threatened by vehicles (CNPS 2010).

Based on current range and habitat preferences, Red Rock poppy has a likely potential to occur on segments A, B, C, and E; and a possible potential to occur on segment D. No individuals of Red Rock poppy were observed during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which Red Rock poppy may occur are described below.**

Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment B: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment D: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.

San Gabriel Bedstraw

San Gabriel bedstraw (*Galium grande*) is a yellow-flowered sprawling semi-woody perennial in the Bedstraw Family (Rubiaceae) that blooms from January to July (CNPS 2010). It grows in chaparral, open broad-leaved upland forests, cismontane woodlands, and lower montane conifer forests at elevations of 1,400 to 5,000 feet (CNPS 2010). It is not federally or state listed. The CNPS online Inventory includes it on List 1B.2 (CNPS 2010), and the USFS considers it to be a “sensitive” species. This species is possibly threatened by trail and road use and maintenance, and firebreak maintenance (CNPS 2010, USFS 2005).

San Gabriel bedstraw is endemic to Los Angeles County in the San Gabriel Mountains, and possibly the Liebre Mountains. Eight of the nine recorded occurrences are on the ANF (CNPS 2010); none of these are in the vicinity of the Project area. ANF has adopted species management guidelines for San Gabriel bedstraw (CNPS 2010).

Based on current range and habitat preferences, San Gabriel bedstraw has a likely potential to occur on segments D, G, H, I, J, K, and 2a. No known locations are found within the vicinity of the Project area. This species was not found during the 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which San Gabriel bedstraw may occur are described below.**

Segment D: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment G: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Likely. Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment I: Likely. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment J: Likely. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment K: Likely. Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Delicate Bluecup

Delicate bluecup (*Githopsis tenella*) is an annual herb in the Bluebell Family (Campanulaceae). It has deep blue flowers and blooms during May to June. It occurs in moist places in oak woodlands and is associated with chaparral and cismontane woodland habitats at elevations of 3,609 to 6,234 feet (Hickman 1993, CNPS 2010). It is a CNPS List 1.B3 species and is known from only four occurrences in California, three which are in Kern County (CDFG 2010, CNPS 2010).

Based on current range and habitat preferences, delicate bluecup has a likely potential to occur on segment G; a possible potential to occur on segments D, H, I, and 2a; and an unlikely potential to occur on segments J and K. This species was not found during the 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which delicate bluecup may occur are described below.**

Segment D: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is known within 10 miles of segment.
Segment G: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment K: Unlikely. Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Palmer's Grapplinghook

Palmer's grapplinghook (*Harpagonella palmeri*) is a white-flowered annual herb in the Boraginaceae family that blooms from March to May (CNPS 2010). It occurs on dry sites in chaparral, coastal scrub, and valley and foothill grasslands in clay soils 66 to 3,133 feet in elevation (Hickman 1993, CNPS 2010, CDFG 2010). It is not state or federally listed but the CNPS online Inventory includes it on List 4.2, indicating that it is of limited distribution in California. Palmer's grapplinghook is found in Los Angeles, Orange, Riverside, and San Diego Counties and is threatened by development, non-native plants, and agriculture (CNPS 2010).

Based on current range and habitat preferences, Palmer's grapplinghook has a likely potential to occur on segments B, C, D, H, J, and K; and a possible potential to occur on segments A, E, F, G, I, 115, and 2a. There is one recorded non-specific point occurrence of this species approximately 2.5 miles from Segment K, but this species was not found during the 2008 or 2009 protocol level surveys conducted for this Project. **Segments in which Palmer's grapplinghook may occur are described below.**

Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment D: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment E: Possible. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment F: Possible. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment.
Segment G: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment H: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment K: Likely. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment 115: Possible. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Urn-flowered Alumroot

Urn-flowered alumroot (*Heuchera elegans*) is a rhizomatous herb in the Saxifrage Family (Saxifragiaceae). It generally has white flowers and blooms during May to August. It occurs in rocky areas in cismontane woodland, lower montane coniferous forest, montane riparian forest, and upper montane coniferous forest at elevations of 3,845 to 8,825 feet (Hickman 1993, CNPS 2010). It is a CNPS List 4.3 and Forest Sensitive species and is threatened by foot traffic (CNPS 2010).

Based on current range and habitat preferences, urn-flowered alumroot has a possible potential to occur on segments H, I, and 2a. This species was not found during the 2008 or 2009 protocol level surveys conducted for this Project. **Segments in which urn-flowered alumroot may occur are described below.**

Segment H: Possible. Suitable habitat exists in Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Mesa Horkelia

Mesa horkelia (*Horkelia cuneata* ssp. *puberula*) is a perennial herb in the Rose Family (Rosaceae) that flowers during February to July (September is unusual). It occurs in dry, sandy, coastal chaparral associated with maritime chaparral and cismontane woodland, at elevations of 230 to 2,660 feet (Hickman 1993, CNPS 2010). It is a CNPS List 1B.1 and Forest Sensitive species that is possible threatened by habitat conversion (CNPS 2010). There are 58 occurrences in California, 26 which are in Los Angeles and Ventura Counties (CDFG 2010, CNPS 2010).

Based on current range and habitat preferences, urn-flowered alumroot has a possible potential to occur on segments H, I, and 2a. This species was not found during the 2008 or 2009 protocol level surveys conducted for this Project. **Segments in which urn-flowered alumroot may occur are described below.**

Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment B: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment C: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment D: Possible. Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment G: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 115: Possible. Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

California Satintail

California satintail (*Imperata brevifolia*) is a rhizomatous perennial grass in the Grass Family (Poaceae) that blooms from September to May (CNPS 2010). It occurs at wet springs, meadows, streamsides, and floodplains and is associated with mesic sites within chaparral, coastal scrub, Mojave Desert scrub, meadows and seeps (often alkaline), and riparian scrub, from 0 to 1,640 feet (Hickman 1993, CNPS 2010). It is not federally or state listed. The CNPS online Inventory includes it on List 2.1 (CNPS 2010), and the USFS tracks it as a "sensitive" species. This species is threatened by development and agriculture (CNPS 2010).

Within California, this species is known from Butte, Fresno, Imperial, Inyo, Kern, Lake, Los Angeles, Orange, Riverside, San Bernardino, Tehama, Tulare, and Ventura Counties (CNPS 2010). The CNDDB (CDFG 2008a) lists 27 occurrences for California satintail, including two within the ANF, but there are no known locations within the vicinity of the Project area.

Based on current range and habitat preferences, California satintail has a possible potential to occur on segments D, G, H, I, J, and K; and an unlikely potential to occur on segments A, B, C, E, 115, and 2a. The Project area has very few mesic sites, and no locations are known in the vicinity. No individuals of this species were found during 2008 or 2009 protocol-level surveys within the Project area on ANF lands. **Segments in which California satintail may occur are described below.**

Segment A: Unlikely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment B: Unlikely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment C: Unlikely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment.

Segment D: Possible. Suitable habitat exists in Chamise Chaparral, Joshua Tree Woodland Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Unlikely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment G: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 115: Unlikely. Suitable habitat exists in Riversidian Sage Scrub; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment 2a: Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Southern California Black Walnut

Southern California black walnut (*Juglans californica*) is a tall deciduous tree in the Walnut Family (Juglandaceae) that blooms from March through August (CNPS 2010). Southern California black walnut occurs along slopes, canyons, and valleys within chaparral, coastal scrub, and cismontane woodlands at elevations of 160 to 2,950 feet (Hickman 1993, CNPS 2010). It typically occupies mesic areas such as riparian corridors, floodplains, and north-facing slopes, and prefers soils with high clay content (USFS 2005). It is not federally or state listed.

The CNPS online Inventory places it on List 4.2 (CNPS 2010), and the USFS includes it on their Watch List. Southern California black walnut is threatened by urbanization, grazing, invasive non-native plants, and possibly by a lack of natural regeneration and hybridization with non-native walnut species (CNPS 2010). Southern California black walnut is endemic to southern California, where it is known from Santa Barbara, Ventura, Los Angeles, Orange, San Bernardino, Riverside, and San Diego Counties. Its distribution is fragmented. Large stands are present in Ventura, Los Angeles, and northern Orange Counties (USFS 2005). On the ANF, the species occurs in Pacoima Canyon in the San Gabriel Mountains (USFS 2005).

Based on current range and habitat preferences, Southern California black walnut has a possible potential to occur on segments A, B, C, D, E, G, H, I, J, K, 115, and 2a. Marginally suitable habitat is present, but there are no known locations within the vicinity of the Project area. No individuals of Southern California black walnut were found during 2008 and 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which Southern California black walnut may occur are described below.**

Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment B: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment C: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.

Segment D: Possible. Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment G: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 115: Possible. Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Pale-yellow Layia

Pale-yellow layia *(Layia heterotricha)* is a white- to cream-colored annual herb in the Sunflower Family (Asteraceae) that blooms during March to June. It occurs on open, clay soils and is associated with cismontane woodland, coastal scrub, pinyon and juniper woodland, and valley and foothill grassland habitats, at elevations of 984 to 5,594 feet (Hickman 1993, CNPS 2010). It is a CNPS List 1B.1 species and threatened by agricultural conversion, previous construction of San Antonio Reservoir, grazing, non-native plants, vehicles, and possibly road maintenance (CNPS 2010).

Based on current range and habitat preferences, pale-yellow layia has a likely potential to occur on segments A, B, C, E, F, G, H, and I; and a possible potential to occur on segments D, J, K, and 115. No individuals of pale-yellow layia were found during 2008 and 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which pale-yellow layia may occur are described below.**

Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment D: Possible. Suitable habitat exists in California Annual Grassland, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment F: Likely. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment.
Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Likely. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.

Segment I: Likely. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment J: Possible. Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 115: Possible. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.

Fragrant Pitcher Sage

Fragrant pitcher sage (*Lepechinia fragrans*) is a pink-flowered shrub in the Mint Family (Lamiaceae) that flowers between March and October (CNPS 2010). It is known from chaparral habitat, in canyons, between 70 and 4,360 feet in elevation (Hickman 1993, CNPS 2010). Fragrant pitcher sage is not state or federally listed. It is included on List 4.2 of the CNPS online Inventory (CNPS 2010), and the USFS "sensitive" species list. Potential threats to the species include urbanization, fire management, and loss of habitat due to development (CNPS 2010).

Fragrant pitcher sage is endemic to southern California, where it is known from the Santa Monica and San Gabriel Mountains, the Channel Islands, and Santa Barbara, Los Angeles, San Bernardino, and possibly Ventura Counties (CNPS 2010). The Consortium of California Herbaria (Jepson Online Interchange 2008) lists 130 specimens of this species; most of these are from the Channel Islands. It is unclear whether any of these specimens have been collected within ANF lands. The USFS notes that there are about 12 occurrences of fragrant pitcher sage on or near the Angeles and San Bernardino National Forests (USFS 2005).

Based on current range and habitat preferences, fragrant pitcher sage has a possible potential to occur on segments H, I, and 2a; and an unlikely potential to occur on segments D, G, J, and K. Suitable habitat is present, but there are no known locations within the vicinity of the Project area. No individuals of fragrant pitcher sage were found during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which fragrant pitcher sage may occur are described below.**

Segment D: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment G: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Unlikely. Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Ross's Pitcher Sage

Ross's pitcher sage (*Lepechinia rossii*) is a perennial shrub in the Mint Family (Lamiaceae) that blooms from May to September. Currently it is only known from chaparral, from 1,000 - 2,610 feet in elevation (CNPS 2009). It is distinguished from other members of the subgenus *Calycinae* by geniculate inflorescence axes, which are bent at 60–90° angles relative to the subtending stems. It is also distinguished by the presence of large, foliaceous inflorescence bracts which are generally equaling or exceeding their adjacent flowers in length, and little reduced distally (Boyd and Mistretta 2006).

Ross's pitcher sage is not federally or state listed. It is included on CNPS List 1B, meaning that it is rare and endangered throughout its range (CNPS 2009). The CNPS threat extension of .2 means that it fairly endangered in California. The species is considered Sensitive by the Forest Service. As this species is known to be endemic to Los Angeles and Ventura counties, and known from only three locations in the Western Transverse Range (CDFG 2009b), its existence is potentially threatened by logging and mining activities (CNPS 2009). Other conservation concerns include habitat degradation by off-highway vehicle activity, power line maintenance, petroleum exploration and extraction, and anthropogenic changes in fire frequency (Boyd and Mistretta 2006).

Based on current range and habitat preferences, Ross' pitcher sage has a likely potential to occur on segments D, G, H, I, J, K, and 2a. As of the species description in 2006, two populations had been documented, one in the Liebre Mountains (Los Angeles County) and one in the Topatopa Mountains (Ventura County), both occurring in chaparral on public lands administered by the U.S. Forest Service. Ross' pitcher sage was mapped at 13 locations in chaparral habitat on Midway–Vincent, which is no longer part of the proposed Project. The Segment (Midway-Vincent) was an alternative considered and eliminated. Approximately 137 individual plants were observed. **Segments in which Ross' pitcher sage may occur are described below.**

Segment D: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment G: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Likely. Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment I: Likely. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment J: Likely. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment K: Likely. Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Madera Leptosiphon

Madera leptosiphon (*Leptosiphon serrulatus*) is an annual herb in the Phlox Family (Polemoniaceae). It has white to purple flowers and blooms during April to May. It occurs in open areas, woodland, and chaparral in cismontane woodland and lower montane coniferous forest habitats, at elevations of 984 to 4,265 feet (Hickman 1993, CNPS 2010). It is a CNPS List 1B.2 species and is threatened by road maintenance, exotic plant control, and erosion (CNPS 2010). There is only occurrence in California, but it is in Tulare County (CDFG 2010).

Based on current range and habitat preferences, Madera leptosiphon has a possible potential to occur on segments H, I, and 2a. No individuals of Madera leptosiphon were found during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which Madera leptosiphon may occur are described below.**

Segment H: Possible. Suitable habitat exists in Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Ocellated Lily

Ocellated lily (*Lilium humboldtii* ssp. *ocellatum*) is an orange-flowered bulb-forming monocot in the Lily Family (*Liliaceae*) that blooms from March to July, and uncommonly in August (CNPS 2010). This species occurs in yellow pine forests and openings associated with coastal scrub, chaparral, riparian woodland, and in lower montane coniferous forest, between 100 and 5,900 feet in elevation (Hickman 1993, CNPS 2010). Plants on the Cleveland, Los Padres, and San Bernardino national forests are found in riparian areas and seeps of chaparral canyons (CNPS 2001) (USFS 2005). Ocellated lily is not state or federally listed. The CNPS online Inventory includes it on List 4.2 (CNPS 2010), and it is included on the USFS Watch List. Threats to this species include development and horticultural collecting on the mainland, and feral herbivores on the Channel Islands (CNPS 2010). Potential threats on National Forest lands also include flooding and erosion, recreation, and fuel and vegetation treatments (USFS 2005).

Ocellated lily is the southern California subspecies of the Humboldt lily. It is endemic to southern California, and is widespread, though uncommon, in the Santa Ynez and San Rafael mountains in Santa Barbara County, the Topatopa Mountains of Ventura County, the Santa Monica Mountains and Transverse Ranges of Los Angeles County, the eastern San Gabriel and San Bernardino Mountains of San Bernardino County, the San Jacinto Mountains of Riverside County, and the Santa Ana Mountains of San Diego County (Jepson Online Interchange 2008). Ocellated lily is also found on Santa Cruz and Santa Rosa islands (CNPS 2010). The Consortium of California Herbaria lists 184 specimens for this taxon (Jepson Online Interchange 2008), including 47 from Los Angeles County. At least one of these is a recent specimen from the vicinity of the Project area (Liebre Mountain).

Based on current range and habitat preferences, ocellated lily has a possible potential to occur on all segments except F. One location is documented from the Project vicinity. No individuals of this species were identified during 2008 or 2009 protocol-level surveys for this Project on ANF land. **Segments in which ocellated lily may occur are described below.**

Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment B: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment C: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment D: Possible. Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment G: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Segment 115: Possible. Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Sagebrush Loeflingia

Sagebrush loeflingia *(Loeflingia squarrosa* var. *artemisiarum)* is a yellow-flowered annual herb in the Pink Family (Caryophyllaceae) that blooms during April to May. It occurs on sand dunes and sandy flats and is associated with desert dunes, Great Basin scrub, and Sonoran desert scrub, at elevations of 2,297 to 5,299 feet (Hickman 1993, CNPS 2010). It is on the CNPS list 2.2 and is threatened by grazing and vehicles (CNPS 2010).

Based on current range and habitat preferences, sagebrush loeflingia has a possible potential to occur on segments C and D. No individuals of this species were identified during 2008 or 2009 protocol-level surveys for this Project on ANF land. **Segments in which sagebrush loeflingia may occur are described below.**

Segment C: Possible. Suitable habitat exists in Rabbitbrush Scrub; elevation is not appropriate; and species is known within 10 miles of segment.
Segment D: Possible. Suitable habitat exists in Rabbitbrush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.

Peirson's Lupine

Peirson's lupine (*Lupinus peirsonii*) is a yellow-flowered perennial herb in the Pea Family (Fabaceae) that blooms in April to June. It occurs on loose gravel in Joshua tree woodland, lower montane coniferous forest, pinyon and juniper woodland, and upper montane coniferous forest, at elevations of 3,330 to 8,325 feet (Hickman 1993, CNPS 2010). It is a CNPS List 1B.3 and Forest Sensitive species. This species is known only from seven occurrences in Los Angeles County, in the San Gabriel Mountains (CDFG 2010, CNPS 2010).

Based on current range and habitat preferences, Peirson's lupine has a possible potential to occur on segments A, B, C, D, and E. No individuals of this species were identified during 2008 or 2009 protocol-level surveys for this Project on ANF land. **Segments in which Peirson's lupine may occur are described below.**

Segment A: Possible. Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment.
Segment B: Possible. Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment.
Segment C: Possible. Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment.
Segment D: Possible. Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Possible. Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment.

Davidson's Bush-mallow

Davidson's bush-mallow (*Malacothamnus davidsonii*) is a deciduous shrub in the Mallow Family (Malvaceae). This species has pale pinkish purple or white flowers (often purplish when dry) that bloom during June to January. It occurs on slopes and washes in chaparral, cismontane woodland, coastal scrub, and riparian woodland, at elevations of 607 to 2,805 feet (Hickman 1993, CNPS 2010). It is a CNPS List 1B.2 species and is threatened by urbanization and possibly also maintenance activities (CNPS 2010).

Based on current range and habitat preferences, Davidson's bush-mallow has a likely potential to occur on segments AB, C, D, E, G, I, J, and K; and a possible potential to occur on segments A, F, H, 115, and 2a. No individuals of this species were identified during 2008 or 2009 protocol-level surveys for this Project on ANF land. **Segments in which Davidson's bush-mallow may occur are described below.**

Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment D: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment E: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment F: Possible. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment.
Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment K: Likely. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment 115: Possible. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Creamy Blazing Star

Creamy blazing star (*Mentzelia tridentata*) is a yellow-flowered annual herb in the Loasa Family (Loasaceae) that blooms from March to May. It is known from gravelly and sandy soils within Mojavean desert scrub from 2,250 to 3,850 feet in elevation (CNPS 2009). It is a CNPS List 1B.2 and BLM SS species (CNPS 2009). Creamy blazing star is greatly threatened by vehicles, mining, and grazing (CNPS 2009). Creamy blazing star is endemic to the desert habitats of Imperial, Inyo, Kern, Riverside, San Bernardino, and San Diego Counties. The CNDDB (CDFG 2009b) lists 11 occurrences for this species; most of these are in San Bernardino County.

Based on current range and habitat preferences, creamy blazing star has a likely potential to occur on segments A, B, C, and E; and a possible potential to occur on segment D. There is a historical occurrence of this species just north of Segment A in Red Rock Canyon. No individuals of creamy blazing star were observed during 2009 surveys conducted for this project on BLM lands. **Segments in which creamy blazing star may occur are described below.**

Segment A: Likely. Suitable habitat exists in Joshua Tree woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment B: Likely. Suitable habitat exists in Joshua Tree woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment C: Likely. Suitable habitat exists in Joshua Tree woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment D: Possible. Suitable habitat exists in Joshua Tree woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Likely. Suitable habitat exists in Joshua Tree woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.

Calico Monkeyflower

Calico Monkeyflower (*Mimulus pictus*) is an annual herb in the Figwort Family (Scrophulariaceae). This species has white or maroon flowers with maroon veins and border, and blooms during March to May. It occurs in bare, sunny areas around shrubs and rock outcrops on granitic soils and is associated with cismontane woodland and broadleaved upland forest, at elevations of 328 to 4,265 feet (Hickman 1993, CNPS 2010). It is a CNPS List 1B.2 species and is threatened by grazing (CNPS 2010).

Based on current range and habitat preferences, calico monkeyflower has a possible potential to occur on segments H, I, and 2a. No individuals of calico monkeyflower were observed during 2009 surveys conducted for this project on BLM lands. **Segments in which calico monkeyflower may occur are described below.**

Segment H: Possible. Suitable habitat exists in Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Hall's Monardella

Hall's monardella (*Monardella macrantha* ssp. *hallii*) is a rhizomatous herb in the Mint Family (Lamiaceae). It has red-orange to yellow tubular flowers and blooms during June to August. This species occurs in openings, dry slopes, and ridges associated with broadleaved upland forest, chaparral, lower montane coniferous forest, cismontane woodland, and valley and foothill grassland, at elevations of 2,395 to 7,200 feet (CNPS 2010). It is a CNPS List 1B.3 and Forest Sensitive species that is threatened by road maintenance and recreational activities. There are 28 occurrences in California, one which is in Los Angeles County (CDFG 2010).

Based on current range and habitat preferences, Hall's monardella has a possible potential to occur on segments B, D, E, F, G, H, I, J, K, 115, and 2a. No individuals of Hall's monardella were observed during 2009 surveys conducted for this project on BLM lands. **Segments in which Hall's monardella may occur are described below.**

Segment B: Possible. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment.
Segment D: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Possible. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment.
Segment F: Possible. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment.

Segment G: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Possible. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Possible. Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 115: Possible. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Rock Monardella

Rock monardella (*Monardella viridis* ssp. *saxicola*) is a rhizomatous herb in the Mint Family (Lamiaceae). This species has lavender to purple flowers and blooms during July to September. This species occurs on rocky, open slopes and often serpentine soils of montane chaparral and conifer forest (Hickman 1993). It is associated with broadleaved upland forest, chaparral, and cismontane woodland at elevations of 985 to 3,315 feet (CNPS 2010). It is a CNPS List 4.2 and Forest Sensitive species. It is a CNPS List 4.2 and Forest Sensitive species and is threatened by development and road maintenance, and possible by mining and recreational activities (CNPS 2010).

Based on current range and habitat preferences, rock monardella is unlikely to occur on segments D, G, H, I, J, K, and 2a. No individuals of rock monardella were observed during 2009 surveys conducted for this project on BLM lands. **Segments in which rock monardella may occur are described below.**

Segment D: Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment G: Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment H: Unlikely. Marginal habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Unlikely. Marginal habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Unlikely. Marginal habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Unlikely. Marginal habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Unlikely. Marginal habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Ojai Navarretia

Ojai navarretia (*Navarretia ojaiensis*) is an annual white-flowered herb in the Phlox Family (Polemoniaceae) that blooms during May to July. It is associated with chaparral, coastal scrub, and valley and foothill grassland, at elevations of 902 to 2,034 feet. This species is a CNPS List 1B.1 and threatened by development and grazing (CNPS 2010). All 11 occurrences in California are known to Ventura County (CDFG 2010).

Based on current range and habitat preferences, Ojai navarretia has a likely potential to occur on segments B, D, G, J; a possible potential to occur on segments A, C, E, F, H, I, K, and 115; and an unlikely potential to occur on segment 2a. No individuals of Ojai navarretia were observed during 2009 surveys conducted for this project on BLM lands. **Segments in which Ojai navarretia may occur are described below.**

Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment C: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is not appropriate; and species is known within 10 miles of segment.
Segment D: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment E: Possible. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is known within 10 miles of segment.
Segment F: Possible. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment.
Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 115: Possible. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Baja Navarretia

Baja navarretia (*Navarretia peninsularis*) is a lavender-flowered annual herb in the Phlox Family (Polemoniaceae) that blooms during June to August. This species occurs in wet areas in open forest and is associated with chaparral (openings) and lower montane coniferous forest, at elevations of 4,920 to 7,550 feet (Hickman 1993, CNPS 2010). It is a CNPS List 1B.2 and Forest Sensitive species that is threatened by gold-panning and vehicles (CNPS 2010). There are 16 occurrences in California, 11 which are in Kern and Ventura Counties (CNPS 2010).

Based on current range and habitat preferences, Baja navarretia has a possible potential to occur on segment I; and an unlikely potential to occur on segments D, E, F, G, H, J, K, and 2a. No individuals of Baja navarretia were observed during 2009 surveys conducted for this project on BLM lands. **Segments in which Baja navarretia may occur are described below.**

Segment D: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Segment E: Unlikely. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment F: Unlikely. No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment G: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment H: Unlikely. Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment K: Unlikely. Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment 2a: Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Short-joint Beavertail

Short-joint beavertail (*Opuntia basilaris* var. *brachyclada*) is a stem succulent in the Cactus Family (Cactaceae). This species has pink-magenta flowers and blooms during April to June. This species is associated with chaparral, Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland, at elevations of 1,395 to 5,910 feet (CNPS 2010). It is a CNPS List 1B.2, Forest Sensitive, and BLM SS species. Short-joint beavertail is threatened by urbanization, mining, horticultural collecting, grazing, and vehicles, and possible also by power line construction (CNPS 2010).

Based on current range and habitat preferences, short-joint beavertail is present on segments D, G, I, and 2a; has a likely potential to occur on segments C, E, H, and K; and a possible potential to occur on segment A. **Segments in which short-joint beavertail may occur are described below.**

Segment A: Possible. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment B: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment C: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment D: Present. Species known within segment corridor. Suitable habitat exists in Joshua Tree Woodland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment E: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment G: Present. Species known within segment corridor. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Likely. Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral elevation is appropriate; and species is known within 10 miles of segment.
Segment I: Present. Species known within segment corridor. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment J: Likely. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment K: Likely. Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Rock Creek Broomrape

Rock Creek broomrape (*Orobanche valida* ssp. *valida*) is a pink-flowered parasitic perennial in the Broomrape Family (Orobanchaceae) that blooms from May to September (CNPS 2010). It grows on decomposed granite in open chaparral and pinyon and juniper woodlands from 4,100 to 6,600 feet in elevation (Hickman 1993, CNPS 2010). Possible threats to Rock Creek broomrape include invasive non-native plants and recreational activities (CNPS 2010). This species is not state or federally listed. It is included on List 1B.2 of the CNPS online Inventory (CNPS 2010) and is a USFS "sensitive" species. This species is considered to have low vulnerability on National Forest System lands. For the most part, it inhabits remote terrain that receives few impacts; however, management activities that affect the persistence or stability of the chaparral vegetation could adversely affect the taxon (USFS 2005).

Rock Creek broomrape is endemic to California. It has been documented in Inyo, Ventura, Los Angeles and San Bernardino Counties. The CNDDB (CDFG 2008a) lists four occurrences, including two from the ANF. The distribution of Rock Creek broomrape on National Forest System lands is poorly known (USFS 2005). Abundance data collected in the past two decades indicates that known occurrences are stable or increasing (USFS 2005). The total number of plants is estimated at 1,600 with the majority (94 percent) occurring in the San Gabriel Mountains (USFS 2005).

Based on current range and habitat preferences, Rock Creek broomrape has a possible potential to occur on segments G, H, I, and 2a; and an unlikely potential to occur on segments D, J, and K. There are no occurrences known from the vicinity of the Project area. No individuals of this species were observed during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which Rock Creek broomrape may occur are described below.**

Segment D: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment K: Unlikely. Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Gairdner's Yampah

Gairdner's Yampah (*Perideridia gairdneri* ssp. *gairdneri*) is an erect, perennial herb in the Carrot Family (Apiaceae) that blooms from June to October. It is distinguished from other members of *Perideridea* by its tuberous roots in single clusters (related subspecies tuberous roots are 2-3 clustered), 1-pinnate basal leaves (needed for identification) and one-veined petals (Hickman 1993). It occurs in coastal flats, grassland, and pine groves of broadleaf upland forest, chaparral, coastal prairies, valley and foothill grassland and vernal pools below 1,197 feet elevation (CNPS 2010).

Gairdner's yampah occurs throughout northern California and is scarce in southern California. It may potentially occur in Kern, Riverside, San Bernardino and San Diego counties. Gairdner's yampah is not federally or state listed, nor is it included on the list of Forest Service Sensitive Species (USFS 2007). The CNPS places it on List 4, a "watch" list, meaning that it has a limited distribution and any loss of habitat should be noted. Its CNPS threat extension code is .2, indicating it is fairly endangered in California (CNPS 2010).

Based on current range and habitat preferences, Gairdner's yampah has a possible potential to occur on segments D, H, I, J, and K; and an unlikely potential to occur on segments B, E, F, G, 115, and 2a. Gairdner's yampah is not known to occur in the project vicinity. No individuals of this species were observed during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which Gairdner's yampah may occur are described below.**

Segment B: Unlikely. Suitable habitat exists in California Annual Grassland; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment D: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Unlikely. Suitable habitat exists in California Annual Grassland; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment F: Unlikely. Suitable habitat exists in California Annual Grassland; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment G: Unlikely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Possible. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Possible. Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 115: Unlikely. Suitable habitat exists in California Annual Grassland; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment 2a: Unlikely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Charlotte's Phacelia

Charlotte's phacelia (*Phacelia nashiana*) is an annual herb in the Waterleaf Family (Hydrophyllaceae). This species has bell-shaped flowers with a white tube, blue throat, and bright blue lobes, and blooms during March to June. This species occurs on sandy to rocky, granitic slopes and is associated with Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland, at elevations of 1,969 to 7,218 feet (Hickman 1993, CNPS 2010). It is a CNPS 1B.2 and BLM SS species and is threatened by grazing and mining. There are 64 occurrences of this species in California, most which are in Kern County (CDFG 2010).

Based on current range and habitat preferences, Charlotte's phacelia has a likely potential to occur on segments A, B, C, and E; and a possible potential to occur on segment D. No individuals of this species were observed during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which Charlotte's phacelia may occur are described below.**

Segment A: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.

Segment B: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment C: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment D: Possible. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Likely. Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.

White Rabbit-tobacco

White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*) is a perennial herb in the Sunflower Family (Asteraceae). This species has cream to pale yellow pistillate flowers and whitish to purplish disk flowers, and blooms during August to November. It occurs on dry, sandy creek bottoms and is associated with chaparral, cismontane woodland, coastal scrub, and riparian woodland, at elevations of 0 to 6,890 feet. It is a CNPS List 2.2 species (Hickman 1993, CNPS 2010).

Based on current range and habitat preferences, white rabbit-tobacco has a likely potential to occur on segments B, C, E, G, and K; and a possible potential to occur on segments A, D, F, H, I, J, 115, and 2a. No individuals of this species were observed during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which white rabbit-tobacco may occur are described below.**

Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment D: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment F: Possible. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment.
Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Likely. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment 115: Possible. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Coulter's Matilija Poppy

Coulter's matilija poppy (*Romneya coulteri*) is a shrub in the Poppy Family (Papervaceae) that blooms from March to July. The flowers have large white petals with a yellow center. It is distinguished from its congener, *R. trichocalyx*, by having glabrous sepals, petals measuring 60-100 mm, and leaves measuring 5-20 cm. Coulter's matilija poppy is endemic to Los Angeles, Orange, Riverside, and San Diego Counties. This species occurs in dry washes and canyons in chaparral and coastal scrub habitats, often in burns, from 65 to 3,937 feet in elevation (Hickman 1993, CNPS 2010). Coulter's matilija poppy is not federally or state listed, but is included on the CNPS List 4.2 (CNPS 2009), a watch list, indicating that it has a limited distribution and is fairly rare in California. Threats to this species include urbanization, flood control, road widening, and road maintenance (CNPS 2009).

Based on current range and habitat preferences, Coulter's matilija poppy is likely to occur on Segments G and 2a and has a possible potential to occur on segments A, B, C, D, E, H, I, J, K, and 115. **Segments in which Coulter's matilija poppy occurs or may occur are described below.**

Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment B: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment C: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment D: Possible. Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment G: Likely. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 115: Possible. Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Southern Mountains Skullcap

Southern Mountains skullcap (*Scutellaria bolanderi* ssp. *austromontana*) is a rhizomatous herb in the Mint Family (Lamiaceae). The flowers are white with a blue-mottled lower lip and bloom during June to August. The species occurs on gravelly soils, streambanks, and oak or pine woodland and is associated with chaparral, cismontane woodland, and lower montane coniferous forest, at elevations of 2,000 to 6,660 feet (Hickman 1993, CNPS 2010). It is a CNPS List 1B.2 and Forest Sensitive species and is threatened by grazing and recreational activities (CNPS 2010).

Based on current range and habitat preferences, Southern Mountains skullcap is unlikely to occur on segments D, G, H, I, J, K, and 2a. No individuals of this species were observed during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which Southern Mountains skullcap occurs or may occur are described below.**

Segment D: Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment G: Unlikely. Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment H: Unlikely. Marginal habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Unlikely. Marginal habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Unlikely. Marginal habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Unlikely. Marginal habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Unlikely. Marginal habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Chaparral Ragwort

Chaparral ragwort (*Senecio aphanactis*) is a yellow-flowered annual herb in the Sunflower Family (Asteraceae) that blooms during January to April. This species occurs on drying alkaline flats and is associated with chaparral, cismontane woodland, coastal scrub, and riparian woodland, at elevations of 0 to 6,890 feet. It is a CNPS List 2.2 species (Hickman 1993, CNPS 2010).

Based on current range and habitat preferences, chaparral ragwort has a likely potential to occur on segments B, C, D, E, G, H, I, J, and K; and a possible potential to occur on segments A, F, 115, and 2a. No individuals of this species were observed during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which chaparral ragwort occurs or may occur are described below.**

Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment D: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment E: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment F: Possible. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment.
Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment I: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment J: Likely. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment K: Likely. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment 115: Possible. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Parish's Checkerbloom

Parish's checkerbloom (*Sidalcea hickmanii* ssp. *parishii*) is a perennial herb in the Mallow Family (Malvaceae). This species has pale pink to pink-lavender flowers and blooms during June to August. It is associated with sites disturbed from fire or grazing in chaparral and montane coniferous forest, at elevations of 4,000 to 7,500 feet (Hickman 1993, CNPS 2010). It is a CNPS List 1B.2 and Forest Sensitive species. Parish's checkerbloom is threatened by urbanization, recreational activities, vegetation/fuels management, alteration of fire regimes, grazing, road maintenance, and possible also by fire suppression activities (CNPS 2010).

Based on current range and habitat preferences, Parish's checkerbloom has a possible potential to occur on segments G, H, I, and 2a; and an unlikely potential to occur on segments D, J, and K. No individuals of this species were observed during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which Parish's checkerbloom occurs or may occur are described below.**

Segment D: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment K: Unlikely. Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Laguna Mountains Jewel Flower

Laguna Mountains jewel flower (*Streptanthus bernardinus*) is a perennial herb in the Mustard Family (Brassicaceae). This species has light yellow to white flowers and blooms during May to August. It is associated with chaparral and lower montane coniferous forest, at elevations of 2,230 to 8,325 feet (Hickman 1993, CNPS 2010). This species is a CNPS 4.3 and Forest Sensitive species and is threatened by recreational activities, road maintenance, and vehicles (CNPS 2010).

Based on current range and habitat preferences, Laguna Mountains jewel flower has a possible potential to occur on segments G, H, I, and 2a; and an unlikely potential to occur on segments D, J, and K. No individuals of this species were observed during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which Laguna Mountains jewel flower occurs or may occur are described below.**

Segment D: Unlikely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Unlikely. Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Southern Jewel Flower

Southern jewel flower (*Streptanthus campestris*) is a perennial herb in the Mustard Family (Brassicaceae). The flowers are purple with light yellow bases and light purple tips, and blooms during May to July. This species occurs in rocky habitats associated with chaparral, lower montane coniferous forest, and pinyon and juniper woodland, at elevations of 3,000 to 7,660 feet (Hickman 1993, CNPS 2010). It is a CNPS List 1B.3 and Forest Sensitive species (CNPS 2010).

Based on current range and habitat preferences, southern jewel flower has a possible potential to occur on segments D, G, H, I, and 2a; and an unlikely potential to occur on segments J and K. No individuals of this species were observed during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which southern jewel flower occurs or may occur are described below.**

Segment D: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Unlikely. Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment K: Unlikely. Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Piute Mountains Jewel-flower

Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*) is a perennial herb in the Mustard Family (Brassicaceae). The flowers start yellowish-green in bud and become purple upon maturation, and bloom during January to April. It occurs in open chaparral and Piute-cypress stands and is associated with chaparral, cismontane woodland, and coastal scrub, at elevations of 49 to 2,625 feet (Hickman 1993, CNPS 2010). It is a CNPS List 2.2 and BLM SS species and known from only four occurrences in California, all in Kern County (CDFG 2010, CNPS 2010).

Based on current range and habitat preferences, Piute Mountains jewel-flower has a likely potential to occur on segments A, B, C, D, E, G, and K; and a possible potential to occur on segments F, H, I, 115, and 2a. No individuals of this species were observed during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which Piute Mountains jewel-flower occurs or may occur are described below.**

Segment A: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment D: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment E: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment F: Possible. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment.
Segment G: Likely. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Possible. Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Likely. Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment 115: Possible. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

San Bernardino Aster

San Bernardino aster (*Symphyotrichum defoliatum*) is a perennial rhizomatous herb in the Sunflower Family (Asteraceae) that blooms from July to November. San Bernardino aster ranges from 40 to 100 cm in height with strigose foliage. Its many ray flowers are white to pale violet with yellow disk flowers (Hickman 1993). It occurs in grasslands and disturbed plants associated with vernally mesic areas near ditches, streams and springs in cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, marshes and swamps and valley and foothill grassland below 7,000 feet in elevation (Hickman 1993, CNPS 2010).

San Bernardino aster is known to occur in Kern, Los Angeles, Orange, Riverside, San Bernardino, San Luis Obispo and San Diego counties. San Bernardino aster is a Forest Service sensitive species (USFS 2007) but is currently not state or federally listed. CNPS places it on List 1B: Rare, threatened, or endangered in California and elsewhere with a threat extension code of .2, indicating it is fairly endangered in California (CNPS 2010).

Based on current range and habitat preferences, San Bernardino aster has a likely potential to occur on segments B, C, D, E, and G; and a possible potential to occur on segments A, F, H, I, J, K, 115, and 2a. The nearest known occurrence is outside of the project vicinity in the eastern foothills of the Tehachapi

Mountains (CalFlora 2010). No individuals of this species were observed during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which San Bernardino aster may occur are described below.**

Segment A: Possible. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment B: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment C: Likely. Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment D: Likely. Suitable habitat exists in California Annual Grassland, Mojave Creosote Bush Scrub, and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment E: Likely. Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment F: Possible. Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment.
Segment G: Likely. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Possible. Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Possible. Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 115: Possible. Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Greata's Aster

Greata's aster (*Symphyotrichum greatae*) is a rhizomatous herb in the Sunflower Family (Asteraceae). It has pale violet flowers that bloom during June to October. It occurs in damp places in canyons and is associated with broadleaved upland forest, chaparral, cismontane woodland, lower montane coniferous forest, and riparian woodland, at elevations of 984 to 6,594 feet (CNPS 2010, Jepson Online Interchange 2008). It is a CNPS List 1B.3 species and is threatened by non-native plants (CNPS 2010). There are 41 occurrences in California, all which occur in Los Angeles County except for one that is in Ventura County (CDFG 2010).

Based on current range and habitat preferences, Greata's aster has a likely potential to occur on segments D, G, H, I, J, K, and 2a. No individuals of this species were observed during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which Greata's aster may occur are described below.**

Segment D: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment G: Likely. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment H: Likely. Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment I: Likely. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Segment J: Likely. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment K: Likely. Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Segment 2a: Likely. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Lemmon's Syntrichopappus

Lemmon's syntrichopappus (*Syntrichopappus lemmonii*) is a diminutive white-flowered annual herb in the Sunflower Family (Asteraceae) that blooms April to May (CNPS 2010). Lemmon's syntrichopappus occurs in chaparral, Joshua tree woodland, and pinyon and juniper woodland in sandy and gravelly habitats, often in decomposed granite, at elevations ranging from 1,665 to 6,095 feet (CNPS 2010, Jepson Online Interchange 2008). This species is not state or federally listed. It is included on List 4.3 of the CNPS online Inventory (CNPS 2010) and is on USFS Watch List. Potential threats to this species include off-road vehicle damage and exotic annual grass invasion promoted by (and promoting) frequent fire (CNPS 2010, USFS 2005). This species is tolerant of low to moderate disturbance (USFS 2005).

Lemmon's syntrichopappus is endemic to California. It has been documented in the inner South Coast Ranges in Monterey County, and from the Transverse Ranges, and the San Gabriel, San Bernardino, and San Jacinto Mountains in Kern, Los Angeles, San Bernardino, and Riverside Counties (CNPS 2010, USFS 2005). The Consortium of California Herbaria (Jepson Online Interchange 2008) lists 90 specimens for this species, of which 34 are from Los Angeles County. One recent specimen was collected in the Liebre Mountains, in the vicinity of the Project area.

Based on current range and habitat preferences, Lemmon's syntrichopappus has a possible potential to occur on segments A, B, C, D, E, G, H, I, J, K, and 2a. No individuals of this species were found during 2008 or 2009 protocol-level surveys conducted for this Project on ANF lands. **Segments in which Lemmon's syntrichopappus may occur are described below.**

Segment A: Possible. Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment.
Segment B: Possible. Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment.
Segment C: Possible. Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment.
Segment D: Possible. Suitable habitat exists in Joshua Tree Woodland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment E: Possible. Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment.
Segment G: Possible. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment H: Possible. Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral elevation is appropriate; and species is not known within 10 miles of segment.
Segment I: Possible. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment J: Possible. Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment K: Possible. Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Segment 2a: Possible. Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Golden Violet

Golden violet (*Viola aurea*) is a small yellow-flowered perennial herb in the Violet Family (Violaceae) that blooms from April to May. It occurs on dry, sandy slopes associated with Great Basin scrub and pinyon and juniper woodland habitats from 3,280-5,900 feet in elevation (Hickman 1993, CNPS 2009). It is on the CNPS List 2.2 (CNPS 2009) and has no federal status. Threats to species include vehicles, mining, and grazing (CNPS 2009).

Golden violet is known to occur in Kern, Lassen, Los Angeles, Mono, San Bernardino, San Diego, and Sierra Counties. It is also known from Nevada. The CNDDB (CDFG 2009b) lists 11 occurrences for this species in California.

Based on current range and habitat preferences, golden violet has a likely potential to occur on segments C and D. There is a single historical occurrence of this species from the Antelope Valley. No individuals of golden violet star were observed during 2009 surveys conducted for this project on federal lands. **Segments in which golden violet may occur are described below.**

Segment C: Likely. Suitable habitat exists in Rabbitbrush Scrub; elevation is appropriate; and species is known within 10 miles of segment.
Segment D: Likely. Suitable habitat exists in Rabbitbrush Scrub; elevation is appropriate; and species is not known within 10 miles of segment.

4.6.2 Special-Status Wildlife Species

The CNDDB records for the U.S. Geological Survey (USGS) 7.5 minute quadrangles (State Plane) were reviewed for information on sensitive animal species occurrences that have been documented in the vicinity of the study area (See Section 3.2 for a list of quadrangles within the Project Area). Special-status species with known or historic ranges that overlap the study corridors were determined to have a low, moderate, or high potential to occur, or known presence. Additionally, USFWS and previous survey records were reviewed for certain special-status species that may not be currently reflected by the data available on the CNDDB.

Nine species of animals listed under the federal Endangered Species Act as endangered, threatened, or as a candidate for listing have been reported from the Project area (Table 9). These species and their distributions by study area, corridor, and proposed transmission line route are described below. This information is based on species records within the study area and supplemented by detailed field investigations of the proposed transmission line routes. A brief summary of the habitat requirements for each of these species is presented in the following paragraphs. Unless further clarified, "reported sightings" refers to any sightings within the last ten years of writing (1999 – 2009). With few exceptions, no animal sightings prior to 1999 were used for occurrence determinations due to the amount of time that has passed since the sightings and the possible habitat changes that may have occurred in the interim.

Amphibians

San Gabriel Mountain Slender Salamander

San Gabriel Mountain slender salamander (*Batrachoseps gabrieli*) is a Forest Service Sensitive species known only to occur in the San Gabriel Mountains and western end of the San Bernardino Mountains (Stebbins 2003, CDFG 2008d).

It is found under rocks, wood, and fern fronds, and on soil at the base of talus slopes, and can occur in mixed conifer forests or chaparral communities. It is most active on the surface in winter and early spring.

This species has no recorded historical occurrences, and due its limited range in the San Gabriel Mountains is not expected to occur on any segment except possibly Segment K. Segment K contains chaparral and oak woodland habitat throughout its southern end, where it crosses through the San Gabriel Mountains, and San Gabriel Mountain slender salamander is deemed to be very unlikely to occur on this segment.

Arroyo Toad

The arroyo toad (*Bufo californicus*) is a federally Endangered, Forest Service Management Indicator Species, and Department of Fish and Game Species of Special Concern.

Its range extends from the Salinas River Basin in Monterey and San Luis Obispo Counties to Arroyo San Simón in northern Baja California. It occurs in semi-arid regions near washes or intermittent streams, including valley foothill and desert riparian wash. Its microhabitat is in rivers with sandy banks, willows, cottonwoods, and sycamores, or loose, gravelly areas of streams in the drier parts of its range.

The arroyo toad has the most restricted habitat requirements of any frog species in California (Stebbins 2003). It breeds in stream channels with broad open sandy areas, and burrows in sandy or loamy soils (USFWS 1999). Arroyo toad breeding sites do not have a closed canopy of vegetation, and tend to have banks with willow and mule fat scrub (Ramirez 2007). Water in breeding sites is slow flowing and shallow, generally in the main stream channel or nearby channels. Sites usually have no emergent vegetation, and frequently have sandy terraces along the stream edge. Arroyo toads usually breed from mid-February through April (USFWS 1999), but at higher elevations (up to 4,000 feet) they are likely to breed during May and June (Ramirez pers. comm. 2008).

Based on limited information from a pit fall study at Camp Pendleton, arroyo toads have been found to move up to about one kilometer from breeding sites into upland habitats (Holland and Sisk 2001). However, radio-telemetry studies show them generally moving shorter distances, up to several hundred meters away from stream channels (Ramirez 2007). Activity is highest in late winter and early spring, following the rainy season. Breeding generally occurs between March and July.

Based on local historical records of occurrences and potential habitat within the Project corridors, this species is not expected to occur within most of the Project area. Surveys conducted in 2008 and 2009 revealed several areas of suitable arroyo toad habitat. Segments in which arroyo toad may occur are described below.

Segment D: There was one survey site on Segment D, located near the northern boundary of ANF. This area was a sandy streambed that was only observed to contain water during the initial site assessment. The site was dry during every subsequent survey. Arroyo toad is expected to be unlikely to occur on Segment D.

Segment G: There were several survey sites along segment G. These were located in Dry Canyon, where there is a long stretch of wide creekbed that contains suitable arroyo toad habitat. Other sites were located in San Francisquito Canyon, where there are large areas of sandy, suitable arroyo toad habitat. There is also a tributary to San Francisquito Creek in Bee Canyon which contains suitable habitat for toads. However, no signs of arroyo toad were detected during surveys. Arroyo toad is expected to be unlikely to occur on Segment G.

Segment 2a: Habitat in this area is marginal and does not possess sufficient characteristics or size to support a population of arroyo toads. Surveys in this area failed to detect any individuals, and arroyo toad is expected to be unlikely to occur on Segment 2a.

Segment H: There was one survey site along Segment H, located in Haskell Canyon north of the Veluzat Movie Ranch. This site contained marginal arroyo toad habitat, but did not contain many suitable areas for burrowing. Arroyo toad is expected to be unlikely to occur on Segment H.

Segment J: A breeding population of arroyo toads is known to exist in Castaic Creek adjacent to Castaic Power Plant. There is a possibility that some arroyo toads may occur within the project area. Surveys were also conducted unsuccessfully within Segment J in San Francisquito Creek. Arroyo toad is expected to be present on Segment J.

Yellow-Blotched Salamander

The yellow-blotched salamander (*Ensatina eschscholtzii croceater*) is a Forest Service Sensitive species, Bureau of Land Management Sensitive species, and Department of Fish and Game Species of Special Concern endemic to California.

It inhabits evergreen and deciduous forests and well-shaded canyons, as well as oak woodlands and old chaparral. The salamander needs surface objects such as logs, boards, and rocks, as well as old rodent burrows or other types of underground retreats, for shelter.

There are no reported occurrences of this species within the Project area or in the San Gabriel Mountains, and most of the Project does not contain suitable habitat to support its presence. Yellow-blotched salamander is expected to be absent within the Project area.

California Red-Legged Frog

The California red-legged frog (*Rana aurora draytonii*) is a federally Threatened and Department of Fish and Game Species of Special Concern.

Its historic range extends from Marin County and Shasta County southward to northern Baja California in Mexico. It inhabits lowlands or foothills in or near permanent sources of deep water with dense, shrubby, or emergent riparian vegetation. This habitat also includes permanent and semipermanent aquatic habitats, such as creeks and coldwater ponds, with emergent and subemergent vegetation and riparian species along the edges. Juveniles are active during the day and night, but adults are primarily active at night. The California red-legged frog usually estivates in rodent burrows or cracks during dry periods.

The California red-legged frog breeds in winter, in general breeding in a short timeframe (one-two weeks) sometime between November and April (Stebbins 2003). There is a known population in San Francisquito Canyon that has been under study for several years by biologists from the San Diego and Irvine Field Offices of the U.S. Geological Survey (USGS). It has been identified every year since 2001 at this site, with the exception of 2006 (USGS 2002, USGS 2003, USGS 2004, USGS 2005a, USGS 2005b, USGS 2007, USGS 2008, USGS 2010, USGS 2011).

When not breeding, the California red-legged frog disperses into upland habitat (Bulger et al. 2003). It can travel up to 300 meters (m) in a few days when migrating to and from breeding sites, and up to 500 m away from aquatic sites in longer travel bouts. When traveling into upland areas it does not necessarily follow riparian corridors; in coastal areas, it travels overland regardless of vegetation type or topography (Bulger et al. 2003).

Most of the Project area does not contain suitable habitat to support this species, as it lacks permanent or semi-permanent large, deep pools of water that would allow this species to breed and sustain a population. Surveys were conducted in 2008 and 2009 within the project area, although only one sign was found, a single tadpole identified as possibly being California red-legged frog located downstream of where Segment J crosses San Francisquito Canyon. No other indications of species presence were found, and the known population in San Francisquito Canyon is believed to be an isolated population, not within feasible migratory distance from any other populations (Rathbun and Scott 2010). Segments on which California red-legged frog may occur are described below.

Segment G: While there is a known population of California red-legged frogs located near the site of the St. Francis Dam in San Francisquito Canyon, they are unlikely to migrate over the ridgetop to the Segment G corridor. The segment does not cross into San Francisquito Canyon until approximately five miles upstream at Power Plant 1. There is a location where Forest Road 5N27 crosses San Francisquito Creek and the California red-legged frog designated critical habitat, and this crossing will not be used for construction access. The road leading to Bee Canyon will be used for construction access, although multiple protocol surveys during the breeding and non-breeding periods of 2008 and 2009 at several locations upstream of the known population failed to find any sign of the species. There is suitable habitat for California red-legged frog under the segment in Drinkwater Flat which appears to be perennial in specific locations, although no sign of the species was found during 2008 and 2009 surveys at these locations (POWER 2010a). California red-legged frog is expected to have a possibility of occurring along Segment G.

Segment H: One site was surveyed for this species within the Segment H corridor (POWER 2010a). Other locations throughout the segment were not observed to contain the water duration necessary for this species, and Bouquet Creek was determined to be too swiftly-flowing for this species to breed in, although it would otherwise be suitable habitat with a slower flow regime. No sign of this species was detected at the site surveyed in Haskell Canyon. California red-legged frog is expected to be unlikely to occur on Segment H.

Segment J: Two sites were surveyed for this species on Segment J in San Francisquito Canyon. A single tadpole was located at one of the sites that was identified as possibly being of this species (POWER 2010a). However, this site was subsequently dry on follow-up visits in 2008 and 2009, and it is unlikely that this tadpole hatched from an egg mass at this site. More likely, it flowed downstream during a suitable flood period from the known population farther upstream, and because the water at this location is intermittent and was dry on follow-up visits, the tadpole likely desiccated. No other areas were deemed to be of suitable habitat for this species. California red-legged frog is expected to be unlikely to occur on Segment J.

Foothill Yellow-Legged Frog

The foothill yellow-legged frog (*Rana boylii*) is a Forest Service Sensitive species, Bureau of Land Management Sensitive species, and a Department of Fish and Game Species of Special Concern.

It inhabits partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. It needs some sort of cobble-sized substrate in order to lay its eggs.

The foothill yellow-legged frog is considered extirpated south of the southern border of Monterey County (Stebbins 2003). While previously found in the southern Sierra Nevada Mountains and transverse ranges, extensive searching since 1970-1971 has not located populations in these areas.

This species is evidently extirpated in southern California (Stebbins 2003), and is expected to be absent from the Project area.

Mountain Yellow-Legged Frog

The mountain yellow-legged frog (*Rana muscosa*) is a federally Endangered and Forest Service Sensitive species and a Department of Fish and Game Species of Special Concern.

It is endemic to California and its historical range originally included the Sierra Nevada, San Gabriel, San Jacinto, and San Bernardino Mountains. It inhabits lakes, meadow streams containing perennial water, deep and isolated pools, and open, sunny riverbanks lacking heavy vegetative cover.

Breeding season in the southern California populations occurs between March and July. The mountain yellow-legged frog breeds in ponds and ponded parts of streams. Unlike most frogs which are nocturnal, the mountain yellow-legged frog is diurnally active, and thus easily found during the day. It is usually found within a few jumps of water (Stebbins 2003). The tadpoles take more than one year to transform (AmphibiaWeb 2008); it is thus only found in permanent bodies of water.

The mountain yellow-legged frog has been almost completely extirpated from its former range in southern California, and in 2002 it was known in southern California from only eight very small populations (fewer than 20 individuals) (Stebbins 2003, USFWS 2002, Vredenburg et al. 2007). Following extensive searches in more recent years, mountain yellow-legged frogs were found in 2005 in five places on the ANF by the USGS (Compton et al. 2005). These locations are Bear Gulch, Devil's Canyon, Little Rock Creek, South Fork Big Rock Creek and Vincent Gulch. They are not in or near the Project area, but rather in the southern portion of the ANF.

Because of the lack of recorded occurrences and suitable habitat within the Project area, this species is expected to be absent from the Project area.

Western Spadefoot Toad

The western spadefoot toad (*Spea hammondii*) is a Department of Fish and Game Species of Special Concern and a Bureau of Land Management Sensitive species.

It is present throughout the Central Valley and neighboring foothills and from Santa Barbara County south to Mexico, although it has undergone substantial loss in parts of its range (CDFG 2008d, Stebbins 2003). It is primarily found in grasslands, but can also persist in valley-foothill woodlands, washes, floodplains, alluvial fans, playas, and alkali flats; it will reproduce in slow-flowing streams and temporary pools (CDFG 2010, CDFG 2008d, Stebbins 2003).

Western spadefoot toads mostly reside in subterranean burrows which are either dug with the use of the spades on their feet or which are pre-existing burrows from other animals (CDFG 2008d). Their emergence from burrows is usually associated with rains or humidity at night from fall through spring. Breeding and egg-laying generally occur from late winter to the end of March. Eggs normally hatch within two weeks, and tadpoles also transform quickly.

Based on known occurrences and availability of suitable habitat, this species is expected to be present or have the potential to occur in the southern portion of the Project. Segments on which western spadefoot may occur are described below.

Segment D: Tadpoles have been observed within one mile of this segment, which contains a mixture of chaparral, grassland, and scattered patches of coastal sage scrub (CDFG 2010). Western spadefoot toad is expected to be present along Segment D.

Segment G: POWER heard calls on numerous occasions within one mile of this segment during 2009 surveys (POWER 2010a); these were tentatively identified as western spadefoot toads but were never verified with visual sightings. Habitat consists of mostly chaparral and annual grassland with mixed intermittent and perennial water. Western spadefoot toad is expected to be likely to occur along Segment G.

Segment 2a: There are no recorded sightings along this segment, but this species was potentially heard calling on several occasions on Segment G. Habitat along this alternative consists of mainly chaparral with an oak woodland along its southern end. Western spadefoot toad is expected to be likely to occur along Segment 2a.

Segment H: There are no recorded sightings within one mile of this segment, but there are numerous sightings within five miles of it. There is habitat within Haskell Canyon on the lower end of this segment, where there is intermittent water in the drainage and recovering chaparral and grassland on the slopes. Western spadefoot toad is expected to be likely to occur along Segment H.

Segment I: There are no recorded sightings of this species within one mile of this segment, but there are numerous sightings within five miles of it. This segment contains mostly chaparral and grassland in its lower portion and predominantly grassland in its upper portion. There are appropriate riparian areas around the eastern corner of this segment and particularly on its western side in Vasquez Canyon. Western spadefoot toad is expected to be likely to occur along Segment I.

Segment J: Tadpoles and adults have been observed within one mile of this segment, which contains a mixture of chaparral, grassland, and scattered patches of coastal sage scrub (CDFG 2010). POWER also heard an adult spadefoot calling during 2009 surveys within one mile of this segment (POWER 2010a). Western spadefoot toad is expected to be present along Segment J.

Segment K: Tadpoles and egg masses have been documented within one mile of this segment in temporary pools near the Santa Clara River, while additional adults, tadpoles, and egg masses have been observed within two miles of the segment (CDFG 2010). Much of this segment is in urban areas, but appropriate habitat for this species exists around the Santa Clara River. Western spadefoot toad is expected to be present along Segment K.

Aves

Northern Goshawk

The northern goshawk (*Accipiter gentilis*) is a Forest Service Sensitive species, Bureau of Land Management Sensitive species, and Department of Fish and Game Species of Special Concern.

It generally occurs within and in the vicinity of coniferous forests, and uses both old nests and maintains alternate sites. It will usually nest on north slopes, and near water, using red firs, lodgepole pines, Jeffrey pines, and aspens as typical nesting trees. The northern goshawk feeds on large birds, squirrels, rabbits, and hares.

Based on its range, this species is expected to be absent from the Project area (CDFG 2010, Squires and Reynolds 1997).

Golden Eagle

The golden eagle (*Aquila chrysaetos*) is a Department of Fish and Game Fully Protected Species and Watch List Species and a Fish and Wildlife Service Bird of Conservation Concern.

It breeds throughout the United States and in Canada, Europe, and Asia, and is a year-round resident of much of the western United States (Kochert et al. 2002). It is more rare in California's Central Valley and southeastern deserts from the Salton Sea and east. In California, the golden eagle typically nests in open grasslands and oak savannas and less frequently in oak woodlands and open shrublands (Kochert et al. 2002). Preferred nesting sites are on cliffs or in large trees surrounded by open habitat (CDFG 2008d). Foraging also typically occurs in open grassland habitats, and winter habitat in Southern California is primarily in mountainous areas (Kochert et al. 2002). Territories in Southern California are around 36 square miles on average, and home ranges are believed to be the same (CDFG 2008d). Breeding occurs from late January through August, peaking from March to July (CDFG 2008d).

Based on its range and the availability of suitable habitat, this species is expected to have the potential to occur in the northern region of the Project. Southern regions are likely too developed and/or shrubby to support this species. Segments on which the golden eagle may occur are described below.

Segment A: There are no reported sightings in the vicinity of Segment A, but there are several sightings in and near Segment B (Kern County 2009). Habitat on Segment A is suitable for foraging and there may be individuals in the Tehachapi Mountains west of this segment. Golden eagle is expected to have a possibility of occurring along Segment A.

Segment B: There are multiple sightings within and in the vicinity of Segment B from surveys conducted for the Alta-Oak Creek Mojave Project (Kern County 2009). Golden eagle is expected to be present along Segment B.

Segment C: There are multiple sightings within two miles of Segment C from surveys conducted for the Alta-Oak Creek Mojave Project (Kern County 2009), as well as seven sightings over a period of four field seasons within the Pacific Wind Energy Project, which overlaps with Segment C (Kern County 2010a). This species was also observed foraging several times within the PdV Wind Energy Project footprint, which is located between Segment C and the Tehachapi Mountains (Kern County 2007). Golden eagle is expected to be present along Segment C.

Segment D: There are seven sightings over a period of four field seasons within the Pacific Wind Energy Project, which overlaps with Segment D (Kern County 2010a). This species was also observed foraging several times within the PdV Wind Energy Project footprint, which is located north of Segment D between the aqueduct and the Tehachapi Mountains (Kern County 2007). Golden eagle is expected to be present along Segment D.

Segment E: There are seven sightings over a period of four field seasons within the Pacific Wind Energy Project, which is located in Segments C and D and in the vicinity of Segment E (Kern County 2010a). This species was also observed foraging several times within the PdV Wind Energy Project footprint, which is located north of Segments C and D between the aqueduct and the Tehachapi Mountains (Kern County 2007). However, Segment E has numerous farms and agricultural areas along its length and has a relatively high degree of human activity compared to Segments C and D. Golden eagle is expected to have a possibility of occurring along Segment E.

Segment F: While suitable foraging habitat is present along Segment F, there is a relatively high amount of human activity between the Tehachapi Mountains and this area. Segment F has several major roads and numerous houses in its vicinity. Golden eagle is expected to be unlikely to occur along Segment F.

Segment G: While suitable foraging habitat is present along Segment G, there is a relatively high amount of human activity between the Tehachapi Mountains and this area. Segment G has several major roads and numerous houses in its northernmost area, followed by the Leona Valley and the Angeles National Forest as the segment moves south, both of which have relatively high levels of development compared to the areas around the Tehachapi Mountains. Golden eagle is expected to be unlikely to occur along Segment G.

Segment H: While suitable foraging habitat is present along Segment H, there is a relatively high amount of human activity between the Tehachapi Mountains and this area. Segment H has several major roads and numerous houses in its northernmost area, followed by the Leona Valley and the Angeles National Forest as the segment moves south, both of which have relatively high levels of development compared to the areas around the Tehachapi Mountains. Golden eagle is expected to be unlikely to occur along Segment H.

Segment I: While suitable foraging habitat is present along Segment I, there is a relatively high amount of human activity between the Tehachapi Mountains and this area. Segment I is near to high sources of human disturbance including Lancaster, Palmdale, SR-14, Sierra Highway, and various residences in the Antelope Valley. Golden eagle is expected to be unlikely to occur along Segment I.

Segment 115: While suitable foraging habitat is present in the vicinity of Segment 115, there is a relatively high amount of human activity between the Tehachapi Mountains and this area. Segment 115 runs along a road and is in an increasingly urbanized area. Golden eagle is expected to be unlikely to occur along Segment 115.

Burrowing Owl

The burrowing owl (*Athene cunicularia*) is a Bureau of Land Management Sensitive species, Department of Fish and Game Species of Special Concern, and Fish and Wildlife Service Bird of Conservation Concern.

Its range extends through all states west of the Mississippi Valley and into Mexico, Central America, and South America. In California it typically inhabits lowlands, including those in the Central Valley, northeastern plateau, southeastern deserts, and coastal areas. For shelters, the burrowing owl uses rodent burrows in sparse grassland, desert, and agricultural habitats. Nesting begins in late March and April. Burrowing owls are typically active at dusk and dawn, but can sometimes be active at night as well.

Based on the availability of suitable habitat and of recorded occurrences, this species is expected to have the potential to occur within all segments except Segment K, which lacks suitable habitat and has no recorded sightings. Segments in which burrowing owl may occur are described below.

Segment A: There are no recorded occurrences of this species on Segment A, but Segment A contains large amounts of relatively undisturbed desert habitat. There are also occurrences south of A on Segments B and C. Burrowing owl is expected to have a possibility of occurring on Segment A.

Segment B: In addition to containing long stretches of relatively uninterrupted habitat, surveys for Southern California Edison's Antelope-Pardee 500 kV Transmission Line Project identified numerous active burrowing owl burrows within 0.5 mile of the existing transmission lines (LSA 2007d), and there are seven other reported sightings of live owls within three miles of the existing lines in this segment (CDFG 2010). Burrowing owl is deemed to be likely to occur along Segment B.

Segment C: There is one reported sighting of a live owl within two miles of existing transmission lines on this segment, in addition to long stretches of suitable habitat (CDFG 2010). Burrowing owl is expected to be likely to occur along Segment C.

Segment D: There are three reported sightings of burrowing owls within three miles of Segment D, in addition to long stretches of potential habitat periodically interrupted by residences (CDFG 2010). Burrowing owl is expected to be likely to occur along Segment D.

Segment E: There are two reported sightings within 1.5 miles of Segment E, but the habitat here is fragmented and broken up by agricultural fields and associated homes and other buildings (CDFG 2010). Burrowing owl is expected to have a possibility of occurring along Segment E.

Segment F: Surveys for the Antelope-Pardee line identified one active burrowing owl burrow within 0.5 mile of the existing transmission line, a burrowing owl in flight approximately 0.3 mile north of the burrow, and over thirty potential burrows within one mile (LSA 2007d). This area contains suitable habitat that is occasionally broken up by residences or major roads. However, because of the active burrow identified within the survey corridor, burrowing owl is expected to be present along Segment F.

Segment G: There is one reported sighting of burrowing owl within one mile of Segment G, which contains a small amount of suitable habitat due both to fragmentation and to a change in habitat from foothills and grassland to montane chaparral (CDFG 2010). However, the CNDDB determination for this occurrence is that it is possibly extirpated. Burrowing owl is expected to be unlikely to occur along Segment G.

Segment H: There is one reported sighting of burrowing owl within three miles of Segment H, which contains a small amount of suitable habitat due both to fragmentation and to a change in habitat from foothills and grassland to montane chaparral (CDFG 2010; same sighting as Segment G). However, the CNDDB determination for this occurrence is that it is possibly extirpated. Burrowing owl is expected to be unlikely to occur along Segment H.

Segment I: There are two reported sightings of burrowing owls within three miles of Segment I, one of which is within one mile of the segment (CDFG 2010). This segment passes through long stretches of suitable habitat that is fragmented by existing development and threatened by future development that was observed by POWER biologists in 2008. Burrowing owl is expected to have a possibility of occurring along Segment I.

Segment 115: Surveys for the Antelope-Pardee 500 kV transmission line identified one active burrowing owl burrow, a burrowing owl in flight, and over thirty potential burrowing owl burrows approximately one mile from this proposed segment (LSA 2007d). This area contains suitable flat grassland habitat occasionally broken up by roads. The California Aqueduct runs through the southern end of the segment. Burrowing owl is expected to be likely to occur along Segment 115.

Swainson's Hawk

Swainson's hawk (*Buteo swainsonii*) is a state Threatened and Forest Service Sensitive species, as well as a Fish and Wildlife Service Bird of Conservation Concern.

Swainson's Hawk is a medium-sized hawk with relatively long, pointed wings and a long, square tail. It breeding habitat includes grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural fields and ranches. Hawks are restricted to portions of the Central Valley and Great Basin regions where suitable nesting and foraging habitat is still available. The loss of agricultural lands to various residential and commercial developments is a serious threat to this hawk throughout California.

It breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, agricultural areas, and ranches. It also requires adjacent suitable foraging areas such as grasslands or alfalfa or grain fields which support rodent populations.

Because its winter range encompasses the Project area, this species may occur within some of the Project's segments, although in some cases it may only be a migrant passing through. Other segments are not expected to be able to support this species based on a lack of suitable habitat or reported occurrences. Segments in which Swainson's hawk may occur are described below.

Segment B: There are three reported pair sightings, two with young, within three miles of Segment B (CDFG 2010). This segment has long stretches of habitat which is intermittently disturbed by roads, highway, homes, or the existing power lines corridor. Swainson's hawk is expected to have a possibility of occurring along Segment B.

Segment D: There are no reported sightings along this segment, although it contains large patches of grassland and shrub habitat. Swainson's hawk is expected to have a possibility of occurring along Segment D.

Segment E: There are no reported sightings along this segment, although it contains an abundance of agricultural fields, which are preferred breeding habitat for this species. The agricultural fields are broken up by residences and associated buildings. Swainson's hawk is expected to have a possibility of occurring along Segment E.

Segment F: There are no reported sightings along this segment, although it contains sections of grassland which may provide foraging habitat for this species. The habitat is broken up by occasional residences. Swainson's hawk is expected to have a possibility of occurring along Segment F.

Segment G: POWER biologists identified several Swainson's hawks circling over Segment G in 2009 over scattered annual grassland habitat. This segment contains mostly chaparral habitat, with the exception of riparian habitat in San Francisquito Canyon and north of Drinkwater Flats along with grassland north of forest boundaries in the Antelope Valley. The California Aqueduct also runs roughly perpendicular to this segment and provides a water source for any hawks. Swainson's hawk is expected to have a possibility of occurring along Segment G.

Segment H: There are no reported sightings along this segment, which contains mostly chaparral except for grassland north of forest boundaries. Bouquet Reservoir is located approximately halfway through this segment and may provide a water source for overwintering or migrant hawks, as well as the California Aqueduct, which passes roughly perpendicular to the segment approximately 2.5 miles north of forest boundaries. Swainson's hawk is expected to have a possibility of occurring along Segment H.

Segment I: There are no reported sightings along this segment, which is mostly disturbed grassland with sparse shrub cover north of the montane region. The California Aqueduct passes through this segment, providing a possible source of water for nearby birds. Swainson's hawk is expected to have a possibility of occurring along Segment I.

Segment 115: There are no reported sightings along this segment, although it contains short grassland that may provide foraging habitat for this species. The habitat is broken up by roads and, on its southern end, the California Aqueduct. Swainson's hawk is expected to have a possibility of occurring on Segment 115.

Western Yellow-Billed Cuckoo

The western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) is a federal Candidate, state Endangered, and Forest Service Sensitive species, as well as a Fish and Wildlife Service Bird of Conservation Concern.

This species inhabits nests in riparian forests along the broad, lower flood-bottoms of larger river systems. It prefers to nest in willow and cottonwood forests with understories of blackberry, nettles, or wild grape.

Based on reported sightings and available suitable habitat, this species is not expected to occur throughout much of the Project area. Habitat surveys conducted in 2008 for various riparian bird species located some areas of suitable habitat. Segments in which western yellow-billed cuckoo may occur are described below.

Segment G: There are no reported sightings along this segment, but 2008 habitat surveys identified suitable habitat for this species in two different locations: Dry Canyon and San Francisquito Creek (POWER 2009a). Dry Canyon is a wide canyon with a sandy and rocky base. It contains an abundance of willow and mulefat, along with larger trees such as cottonwoods. San Francisquito Creek contains intermittent sections of dense riparian vegetation and wide, open-canopy streambed. These are tributaries to the Santa Clara River, where there have been sightings in the past. Western yellow-billed cuckoo is expected to have a possibility of occurring along Segment G.

Segment 2a: There are no reported sightings along this alternative, but 2008 habitat surveys identified suitable habitat for this species within South Portal Canyon. Habitat consists of oak woodland and chaparral on the hillsides on the southern end, and predominantly dense chaparral on the northern end. A stretch of the creek through South Portal Canyon is also perennial, and this creek contains some emergent vegetation. Western yellow-billed cuckoo is expected to have a possibility of occurring along Segment 2a.

Segment H: There are no reported sightings along this segment, but 2008 habitat surveys identified suitable habitat for this species in Bouquet Canyon (POWER 2009a). Bouquet Canyon contains an abundance of riparian vegetation alongside Bouquet Creek, although it quickly turns into chaparral upslope. Western yellow-billed cuckoo is expected to have a possibility of occurring along Segment H.

Southwestern Willow Flycatcher

The southwestern willow flycatcher (*Empidonax traillii extimus*) is a federal and state Endangered species.

It typically inhabits riparian woodlands in southern California, nesting in dense trees or thickets between 3-15 feet above the ground and feeding on insects, particularly mosquitoes.

Based on reported sightings and available suitable habitat, this species is not expected to occur throughout much of the Project area. Habitat surveys conducted in 2008 for various riparian bird species located some areas of suitable habitat. Segments in which southwestern willow flycatcher may occur are described below.

Segment G: Willow flycatchers were observed in San Francisquito Canyon during separate surveys in 1999 and 2001 by Tierra Madre Consultants (Tierra Madre Consultants 1999) and PCR (PCR Services Corporation 2001), respectively. However, due to the timing of the 2001 surveys the birds were indistinguishable to subspecies as all subspecies of northbound willow flycatchers may potentially migrate through San Francisquito Canyon during the survey period. Additionally, 2008 habitat surveys identified suitable habitat for this species in two different locations: Dry Canyon and San Francisquito Creek (POWER 2009a). Dry Canyon is a wide canyon with a sandy and rocky base. It contains an abundance of willow and mulefat, along with larger trees such as cottonwoods. San Francisquito Creek contains intermittent sections of dense riparian vegetation and wide, open-canopy streambed. These are tributaries to the Santa Clara River, where there have been sightings in the past. Southwestern willow flycatcher is expected to have a possibility of occurring along Segment G.

Segment 2a: There are no reported sightings along this alternative, but 2008 habitat surveys identified suitable habitat for this species within South Portal Canyon. Habitat consists of oak woodland and chaparral on the hillsides on the southern end, and predominantly dense chaparral on the northern end. A stretch of the creek through South Portal Canyon is also perennial, and this creek contains some emergent vegetation. Southwestern willow flycatcher is expected to have a possibility of occurring along Segment 2a.

Segment H: There are no reported sightings along this segment, but 2008 habitat surveys identified suitable habitat for this species in Bouquet Canyon (POWER 2009a). Bouquet Canyon contains an abundance of riparian vegetation alongside Bouquet Creek, although it quickly turns into chaparral upslope. Southwestern willow flycatcher is expected to have a possibility of occurring along Segment H.

Peregrine Falcon

The peregrine falcon (*Falco peregrinus*) is a federally Delisted species, state Endangered species, and Forest Service Sensitive species, as well as a Department of Fish and Game Fully Protected species and Fish and Wildlife Service Bird of Conservation Concern.

It resides near wetlands, lakes, rivers, or other bodies of water, generally on cliffs, banks, dunes, mounds, and man-made structures. The nest consists of a scrape on a depression or a ledge in an open site, or occasionally in an older nest.

Based on available suitable habitat and a lack of reported sightings, this species is not expected to occur throughout most of the Project area. Segments in which peregrine falcon may occur are described below.

Segment D: There are no reported sightings along this segment, but it contains a large amount of available water at Castaic Lake, Pyramid Lake and Quail Lake. It also has an abundance of nesting habitat in the form of man-made structures in various buildings around Castaic Lake and Templin Highway and the numerous existing power lines that parallel the planned segment. Peregrine falcon is expected to have a possibility of occurring along Segment D.

Segment G: There are no reported sightings along this segment, but it contains an available water source in San Francisquito Canyon. Appropriate nesting habitat on cliffs and ledges can be found in the large boulders and rock formations along the western side of San Francisquito Canyon, along with the many buildings and existing transmission towers on this segment. Peregrine falcon is expected to have a possibility of occurring along Segment G.

Segment 2a: There are no reported sightings along this alternative, which contains a perennial water source in South Portal Creek. There may also be some minimal nesting habitat. Peregrine falcon is expected to be unlikely to occur along Segment 2a.

Segment H: There are no reported sightings along this segment, but it contains a large amount of available water in both Bouquet Creek and Bouquet Reservoir. Appropriate nesting habitat is limited, but may be found in the newly-constructed Antelope Pardee line or in isolated areas along the corridor and different drainages below. Peregrine falcon is expected to have a possibility of occurring along Segment H.

Segment I: There are no reported sightings along this segment, and it contains limited water availability, which is mainly present in the form of small perennial waterways and the California Aqueduct north of forest boundaries. Appropriate nesting habitat is also limited and is mainly limited to the numerous existing transmission lines and possibly some rocky areas in the southeastern portion of the segment. Peregrine falcon is expected to be unlikely to occur along Segment I.

Segment J: While there are no reported sightings along this segment, there is abundant water near this segment at Castaic Lake and Castaic Lagoon. Seasonal water flows through Castaic and Charlie Creeks. This species may find nesting habitat on existing transmission towers or on or around the dam at Castaic Lake. Peregrine falcon is expected to have a possibility of occurring along Segment J.

California Condor

The California condor (*Gymnogyps californianus*) is a federal- and state-listed Endangered species. The federal listing occurred on March 11, 1967 (32 FR 4001), and the state listing under CESA occurred on June 27, 1971. About 574,400 acres of critical habitat (all outside of the Project Area, see Local Distribution, below) have been delineated for the California condor in the counties of Ventura, Los Angeles, Santa Barbara, San Luis Obispo, Kern and Tulare. Initial conservation efforts focused on saving habitat until evidence was found that suggested sufficient habitat exists to support a large number of condors and that anthropogenic causes, such as lead poisoning, shooting, and collisions with man-made objects, are likely factors in the most recent precipitous decline of the species (USFWS 1996b). The third (and current) revision of the California Condor Recovery Plan was drafted by the USFWS in 1996 and describes the present strategies being employed to achieve the reclassification of the California condor to Threatened by the year 2010, provided that all criteria (described below) are met.

The California condor is the largest soaring bird of North America and one of the largest flying birds in the world. It has a wingspan of around nine feet (2.8 meters) and a broad, wedge-shaped tail. The sexes appear similar, but there is a slight difference in mass, with males averaging 8.8 kg and females averaging 8.1 kg (Snyder and Schmitt 2002). Adult birds are generally black with mostly bald heads and necks. California condors and other New World vultures were originally placed within the Falconiformes order with hawks and their allies; however, genetic studies by Sibley and Alquist (1990), together with behavioral clues (urohydrosis and regurgitative feeding of young), strongly suggest that their closest relatives are the storks, hence they are considered Ciconiiformes by most systematists and provided their own family: Cathartidae (USFWS 1996b).

Pair formation generally begins in December and lasts throughout spring. Once a pair forms, they will remain together year-round for multiple years. Several weeks prior to egg-laying, a network of alternate nest sites are visited until one is selected by the female. Nest investigations consist of the pair entering the site and spending several hours moving organic substrate about with their bills and feet in the area where egg-laying will occur (Snyder and Schmitt 2002). Different nest sites are used by the pair from year to year (Snyder et al. 1986), which may be an adaptation to reduce parasite infestation (Snyder and Schmitt 2002). The network of nest sites used by a single pair may be distributed over an area many miles in diameter. After females select a suitable nest, they lay a single egg (averaging 281 grams), usually between early January and early April (Snyder and Schmitt 2002). Incubation is a cooperative "tag-team" effort between parents and lasts from 53 to 60 days (Snyder and Schmitt 2002), resulting in the hatching of a white downy chick with open eyes.

This species requires vast expanses of open savannah, grass savannah, grasslands, and foothill chaparral in mountain ranges of moderate altitude. Its microhabitat consists of deep canyons with rocky walls for nesting sites, from which it can forage up to 150 miles away (LPFW). Food consists of medium and large dead mammals such as cattle, sheep, deer, and horses. Population decline led to specimens being captured from the wild and brought into captivity in the late 1980s. The California condor has recently begun to be reintroduced into the wild in California and northern Arizona.

Based on recorded sightings and available suitable habitat, this species is expected to be present within two segments and either possibly present or not expected in all others (USFWS 2008b, USFWS 2009d). Segments in which California condor is known to be present or in which it may occur are described below.

Segment D: There is a very high number of sightings of this species northwest, west, and southwest of this segment, along with many sightings throughout Segment D (USFWS 2008b, USFWS 2009d). There is a large amount of chaparral and deep canyons in the mountainous portion of Segment D, and an abundance of grassland and open areas in the section of Segment D north of forest boundaries, although this area has relatively few reported sightings. California condor is expected to be present along Segment D.

Segment G: There are a few reported sightings of this species near Segment G (USFWS 2008b, USFWS 2009d). While this segment has stretches of chaparral that range in fragmentation, and also has large rock walls in San Francisquito Canyon near the location of the St. Francis Dam, it is unlikely that there are any nests in this area based on the density of sightings. Any condors are likely to be merely flyovers. California condor is expected to have a possibility of occurring along Segment G.

Segment 2a: There are some reported sightings of this species near Segment G (USFWS 2008b, USFWS 2009d), which is adjacent to this alternative. There is abundant chaparral on this alternative, but likely no nesting opportunities. Any condors that occur in this area would likely be flyovers for foraging. California condor is expected to have a possibility of occurring along Segment 2a.

Segment H: There are a few reported sightings of this species near Segment H (USFWS 2008b, USFWS 2009d). This segment contains a large amount of chaparral that is disturbed by Bouquet Canyon Road and associated residences, Spunky Canyon Road, Bouquet Reservoir, the Antelope-Pardee line, and operations such as the quarry that is located on Del Sur Road. There are limited opportunities for nesting. Any condors are likely to be flyovers. California condor is expected to have a possibility of occurring along Segment H.

Segment I: There are a few reported sightings of this species near Segment I (USFWS 2008b, USFWS 2009d). This segment contains a large amount of chaparral in its southern mountainous section, and combination of chaparral and grassland in its northern section. Much of the habitat is disturbed by existing transmission lines and roads and their associated buildings such as Vasquez Canyon Road, Sierra Highway, and Elizabeth Lake Road. Any condors are likely to be flyovers. California condor is expected to have a possibility of occurring along Segment I.

Segment J: There have been several reported sightings of this species on Segment J (USFWS 2008b, USFWS 2009d). This segment contains mostly chaparral, coastal sage scrub, and annual grassland. Based on sightings, it is unlikely that there is a nest within this segment; however, nesting likely occurs southwest of this segment near Piru Lake. California condor is expected to be present along Segment J.

Segment K: There are numerous reported sightings of this species on Segment K (USFWS 2008b, USFWS 2009d). This segment contains a high amount of disturbance in its northern end by city roads, State Route 14, and development in the Santa Clarita area. In its southern end between State Route 14 and Interstate 210, where condors have been identified, it is relatively undisturbed except by the existing transmission lines. California condor is expected to be present along Segment K.

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) is a federally Delisted species, but continues to be a state-listed Endangered species and a Forest Service Sensitive species as well as a Department of Fish and Game Fully Protected species.

It is found in most of North America, though about half of its total population can be found in Alaska. It prefers to use ocean shores, lake margins, and rivers for both nesting and wintering, and most nests will be located within one mile of the water source. It nests in large, old-growth or dominant live trees with open branches, especially Ponderosa pine, and roosts communally in winter. The diet is composed of fish. The bald eagle was declared an endangered species in 1967, and upgraded to "threatened" in 1995. In 2007 the bald eagle was removed from the Endangered Species List, but it remains protected under the Migratory Bird Treaty and the Bald and Golden Eagle Protection Act.

Based on reported sightings and availability of suitable habitat, this species is not expected to occur in most of the Project area. Segments in which bald eagle may occur while overwintering are described below.

Segment D: There is a sighting of this species by a USFS ANF employee near this segment at Pyramid Lake, and there is ample available water for any wintering eagles. Castaic Lake, Pyramid Lake, and Quail Lake would provide water for eagles, although sufficient nesting habitat may be limited or fragmented in the patches of conifers around Castaic Lake or in the general area. Bald eagle is expected to have a possibility of occurring along Segment D.

Segment H: There are unconfirmed reported sightings near this segment at Bouquet Reservoir, where there is available water for wintering eagles and where sufficient coniferous trees may be nearby and close enough to be used for nesting. Bald eagle is expected to be likely to occur along Segment H.

Segment J: There are no reported sightings near this segment, but there is ample available water for any wintering eagles at Castaic Lake and Castaic Lagoon. Nesting habitat is limited. Bald eagle is expected to have a possibility of occurring along Segment J.

Loggerhead Shrike

Loggerhead shrike (*Lanius ludovicianus*) is listed as a CDFG Species of Special Concern and Fish and Wildlife Service Bird of Conservation Concern.

Their range in California extends throughout most of the state except for the northwest. Habitats typically occupied by loggerhead shrike include those possessing open space with patchily distributed trees or shrubs. Deserts possessing spiny shrubs and scrubby vegetation as well as pastoral, agricultural, or suburban settings are frequently occupied (Yousef 1996). Nests will usually be constructed in isolated trees or large shrubs within the occupied habitat. Pairs in California remain together year-round and defend their territories from other individuals of their kind. They typically nest earlier than most other passerines, perhaps as a result of their year-round association with mates (Yousef 1996). This bird species preys mainly on arthropods, reptiles, small mammals and other birds. Another common name of this species is "butcher bird" as they are known to store their prey on thorns and barbed wire.

Based on reported sightings and availability of suitable habitat, this species is expected to have a potential to occur on the Project area north of ANF, but is unlikely in the ANF due to a general lack of open areas. Segments in which loggerhead shrike may occur are described below.

Segment A: This species was identified vocalizing on a transmission tower on this segment during desert habitat surveys conducted in 2008 (POWER 2009c). Habitat consists of mostly Mojave creosote bush scrub. Loggerhead shrike is expected to be present along Segment A.

Segment B: There are no reported sightings of this species along this segment, which contains long patches of Mojave creosote scrub with patches of rabbitbrush scrub, Mojave mixed woody scrub, and desert native grassland; the bottom of the segment contains more non-native annual grassland. Loggerhead shrike is expected to be likely to occur along Segment B.

Segment C: This species was identified on this segment during desert habitat surveys conducted in 2008 (POWER 2009c). Habitat is primarily composed of creosote bush scrub and Joshua tree woodland, with pockets of Mojave mixed scrub at the northern end and pockets of semi-desert chaparral at the southern end. Loggerhead shrike is expected to be present along Segment C.

Segment D: This species was identified within 0.5 mile of this segment during a 2009 survey by POWER (POWER 2009d). This segment contains chaparral and non-native grassland interspersed with pockets of semi-desert chaparral, Mojave creosote bush scrub, Mojave mixed woody scrub, desert saltbush scrub, and rabbitbrush scrub in its northern end. The southern end contains a mixture of chaparral with pockets of coastal sage scrub and urbanized areas around Castaic Lake and Castaic Lagoon. Loggerhead shrike is expected to be present along Segment D.

Segment E: There are no reported sightings of this species along this segment, which contains a mixture of desert scrub, agricultural fields, and associated residences and buildings. Loggerhead shrike is expected to have a possibility of occurring along Segment E.

Segment F: There are no reported sightings of this species along this segment, which contains mostly grassland along with isolated residences. Trees and shrubs are infrequent and are more concentrated near residences. Loggerhead shrike is expected to have a possibility of occurring along Segment F.

Segment G: There are no reported sightings of this species along this segment, which contains mostly mixed chaparral, chamise chaparral, non-native grassland, and riparian areas in its southern ANF portion and open grassland with sparse low shrubs in its northern portion. Trees in the northern portion are concentrated around residences. Loggerhead shrike is expected to have a possibility of occurring along Segment G.

Segment H: There are no reported sightings of this species along this segment, which contains mostly chaparral and riparian areas in its ANF portion and open grassland with low shrubs in its northern portion. Loggerhead shrike is expected to be unlikely to occur along Segment H.

Segment I: There are no reported sightings of this species along this segment, which contains mostly chaparral in its southern portion and open grassland with sparse shrubs in its northern, Antelope Valley portion. Trees are mostly concentrated around one large residence on West Avenue L and West 65th Street. Loggerhead shrike is expected to have a possibility of occurring along Segment I.

Segment J: There are no reported sightings of this species along this segment, although a POWER biologist (non-ornithologist) observed a suspected individual of this species in Castaic Creek adjacent to Castaic Power Plant in fall 2009. Habitat along this segment consists mostly of chaparral, coastal sage scrub, and annual grassland, with various sources of intermittent and standing water. Loggerhead shrike is expected to have a possibility of occurring along Segment J.

Segment 115: There are no reported sightings of this species along this segment, which contains mostly flat, low grassland. There are no residences or existing towers for nesting opportunities, and loggerhead shrike is expected to be unlikely to occur along Segment 115.

Coastal California Gnatcatcher

The coastal California gnatcatcher (*Polioptila californica californica*) is a federally Threatened species and Department of Fish and Game Species of Special Concern.

Its entire range extends from coastal southern California to Baja California. It is an obligate permanent resident of low coastal sage scrub below 2500 feet in arid washes on mesas and slopes in southern California. Nests are built in shrubs, with the first eggs appearing in late March. Diet mainly consists of arthropods.

Based on reported sightings and available suitable habitat, this species is not expected to occur in most of the Project area. Segments where coastal California gnatcatcher may occur are described below.

Segment D: Coastal California gnatcatcher was observed within 0.5 mile of the proposed transmission line at Castaic Lake in fall 2010 and spring 2011 during bird use count surveys conducted within the Project area. Additionally, there are two reported sightings of this species near this segment (CDFG 2010). This segment contains isolated patches of appropriate coastal sage scrub habitat for this species (POWER 2009a). Coastal California gnatcatcher is expected to be present on Segment D.

Segment J: Coastal California gnatcatcher was observed within 0.5 mile of the existing transmission line at Castaic Lake in fall 2010 and spring 2011 during bird use count surveys conducted within the Project area. Additionally, there is one sighting of this species approximately 1.3 miles from Segment J (CDFG 2010). During avian habitat surveys in 2008, coastal sage scrub suitable for sustaining this species was located in seven distinct patches in or near Segment J (POWER 2009a). Coastal California gnatcatcher is expected to be present along Segment J.

Segment K: This species was observed within the Project ROW on its southern end over numerous days in December 2009 and January 2010. This area is also within USFWS Designated Critical Habitat. Coastal California gnatcatcher is expected to be present on Segment K.

California Spotted Owl

California spotted owl (*Strix occidentalis occidentalis*) is a Forest Service Sensitive and Management Indicator Species, Bureau of Land Management Sensitive species, Department of Fish and Game Species of Special Concern, and Fish and Wildlife Service Bird of Conservation Concern.

At elevations below 1,000 meters, California spotted owls inhabit areas dominated by oaks and other hardwoods, and coniferous forests at higher elevations (Gutiérrez et al. 1995). They prefer to nest and roost in areas with older, large diameter trees (> 90 cm at breast height) with dense canopy coverage (Bias and Gutiérrez 1992). Foraging habitat is more variable and may also possess intermediate aged trees. Tree densities decrease and shrub densities increase as owls descend to wintering habitat at lower elevations (Gutiérrez 1992).

Pair-bonding for California spotted owls begins with paired roosting and male-to-female courtship feeding beginning in February and early March, followed by nest site selection and egg-laying about a month later (Forsman 1984). Spotted owls outside of the Sierra Nevada use platform nests built by other species, laying one brood of four to six eggs per season in March or April (Gutiérrez et al. 1992). Renesting is rarely initiated after nest failure (Kroel and Zwank 1994). Incubation only occurs by the female, and lasts for around 30 days. During this period, food items are provided by the male. The female will brood the young for eight to ten days before beginning to forage for longer periods and spend more time away from the nest, until the young fledge after approximately five weeks. Egg-laying peaks in mid-April. Fledglings generally disperse in September or October after reaching adult weight (Gutiérrez et al. 1995).

The dusky footed woodrat is the predominant prey for California spotted owls outside of the Sierra Nevada Range (Verner et al. 1992). Other important prey include pocket gophers (*Thomomys* spp.), broad-footed moles (*Scapanus latimanus*), mice (*Peromyscus* spp.), chipmunks (*Eutamias* spp.), and squirrels [Douglas's squirrel (*Tamiasciurus douglasii*), western gray squirrel (*Sciurus griseus*), and California ground squirrel (*Spermophilus beecheyi*)]. Insects are the most numerous prey, but contribute a minor amount to total intake in terms of mass (Gutiérrez et al. 1995).

Based on reported sightings and available suitable habitat as located during 2008 and 2009 habitat assessment surveys (POWER 2009b), this species is not expected to occur throughout much of the Project area. Segments on which California spotted owl may occur are described below.

Segment D: There are no reported occurrences along this segment, although eight nesting and foraging habitat locations were mapped during focused surveys in 2008 and 2009. Three of these areas—Fisher Spring, Liebre Gulch, and Oak Flat Spring—were all deemed to be of moderate quality and were used as calling sites, while the rest of the available habitat on this segment was deemed to be of poor quality and insufficient for calling surveys (POWER 2009b). California spotted owl is expected to be unlikely to occur on Segment D.

Segment G: There are no reported occurrences along this segment, although 12 nesting and foraging habitat locations were mapped during focused surveys in 2008 and 2009. Two of these areas—Baird Canyon and Craig Spring—were deemed to be of moderate quality, while five others—Clearwater Canyon, San Francisquito Canyon, Grass Mountain, Pettinger Canyon, and Spunky Canyon—were deemed to be of good quality (POWER 2009b). Calling surveys were conducted on all seven of these sites, while the remaining four sites were deemed to be of poor quality and insufficient for calling surveys. California spotted owl is expected to have a possibility of occurring on Segment G.

Segment 2a: There are no reported occurrences along this alternative, but focused surveys in 2008 and 2009 identified good quality habitat for this species within South Portal Canyon (POWER 2009b). Calling surveys were conducted within this canyon, but no individuals were located. California spotted owl is expected to have a possibility of occurring on Segment 2a.

Segment H: There are no reported occurrences along this segment, although five nesting and foraging habitat locations were mapped during focused surveys in 2008 and 2009. Two of these areas—Artesian Spring and Bouquet Canyon—were deemed to be of good quality and were used for calling sites (POWER 2009b). The remaining three sites were deemed to be of poor quality and insufficient for calling sites. California spotted owl is expected to be unlikely to occur on Segment H.

Segment J: There are no reported occurrences along this segment, although two nesting and foraging habitat locations were mapped during focused surveys in 2008 and 2009. Charlie Canyon was deemed to be poor quality, while Dry Canyon was deemed to be good quality (POWER 2009b). Three calling stations were established in Dry Canyon, which consists of a wide rocky/sandy streambed with groupings of coast live oak (*Quercus agrifolia*) scattered along its edges. California spotted owl is expected to have a possibility of occurring on Segment J.

Least Bell's Vireo

Least Bell's vireo (*Vireo bellii pusillus*) is a federally- and state-listed Endangered species, and is also a Fish and Wildlife Service Bird of Conservation Concern.

At the time the species was listed, its range was restricted to eight counties south of Santa Barbara, mainly in San Diego; in recent years, it has begun to expand its range again. It is a summer resident of southern California in low riparian areas in the vicinity of water or in dry river bottoms, below 2000 feet. Nesting occurs along margins of bushes or on twigs projecting into pathways, usually willow, baccharis, or mesquite, and generally takes place between late March and early July. Diets consist of insects.

Based on reported sightings and availability of suitable habitat as determined during 2008 and 2009 surveys, this species is deemed to be present on two segments, of moderate potential to occur on three segments, and is not expected on the remaining segments. Segments in which least Bell's vireo may occur are described below.

Segment D: Juveniles and adults were observed during 10 site visits in 2005 within 0.5 mile of the proposed segment centerline (CDFG 2010). Habitat in this specific area contains a patch of dense trees, but is a mixture of open chaparral and disturbed habitat outside of this with scattered trees. These occurrences are also located approximately 0.67 mile from Castaic Lake and 0.25 mile from Castaic Lagoon. Least Bell's vireo is expected to be present along Segment D (Appendix A).

Segment G: Habitat surveys in 2008 identified suitable habitat for this species in two different locations: Dry Canyon and San Francisquito Creek (POWER 2009a). Dry Canyon is a wide canyon with a sandy and rocky base. It contains an abundance of willow and mulefat, along with larger trees such as cottonwoods. San Francisquito Creek contains intermittent sections of dense riparian vegetation and wide, open-canopy streambed. These are tributaries to the Santa Clara River, where there have been sightings in the past. There is also a historical sighting of Least Bell's vireo in San Francisquito Canyon from 1987 (USFS 2010a). Least Bell's vireo is expected to have a possibility of occurring along Segment G.

Segment 2a: There are no reported sightings along this alternative, but 2008 habitat surveys identified suitable habitat for this species within South Portal Canyon. Habitat consists of oak woodland and chaparral on the hillsides on the southern end, and predominantly dense chaparral on the northern end. A stretch of the creek through South Portal Canyon is also perennial, and this creek contains some emergent vegetation. Least Bell's vireo is expected to have a possibility of occurring along Segment 2a.

Segment H: There are no reported sightings along this segment, but 2008 habitat surveys identified suitable habitat for this species in Bouquet Canyon (POWER 2009a). Bouquet Canyon contains an abundance of riparian vegetation alongside Bouquet Creek, although it quickly turns into chaparral upslope. Least Bell's vireo is expected to have a possibility of occurring along Segment H.

Segment J: Juveniles and adults were observed during 10 site visits in 2005 within 0.5 mile of the proposed segment centerline (CDFG 2010). Habitat in this specific area contains a patch of dense trees, but is a mixture of open chaparral and disturbed habitat outside of this with scattered trees. These occurrences are also located approximately 0.67 mile from Castaic Lake and 0.25 mile from Castaic Lagoon. Least Bell's vireo is expected to be present along Segment J (Appendix A).

Mammals

Pallid Bat

The pallid bat (*Antrozous pallidus*) is a Forest Service Sensitive species, Bureau of Land Management Sensitive species, Department of Fish and Game Species of Special Concern, and Western Bat Working Group High Priority species.

Pallid bats inhabit low elevation (< 6,000 feet) rocky arid deserts and canyonlands, and shrub-steppe grasslands, but also occur in higher elevation coniferous forests (> 7,000 feet). It is most abundant in xeric ecosystems, including the Great Basin, Mojave, and Sonoran Deserts (Hermanson and O'Shea 1983). Pallid bats roost alone, in small groups, or in large groups composed of hundreds of individuals. Day and feeding roosts include escarpments and cliffs, caves, mines, trees (especially oak cavities, exfoliating bark, and deciduous trees in riparian areas) and various human structures such as bridges, barns, porches, bat boxes, and buildings. Roosts are generally warmer than ambient temperature, have unobstructed entrances/exits, and are at such a height that access by terrestrial predators is dissuaded (Rambaldini 2005). Although roost fidelity is common, they may switch day roosts on a daily or seasonal basis.

Pallid bats forage over open shrub-steppe grasslands, oak savannah grasslands, open Ponderosa pine forests, talus slopes, gravel roads, lava flows, fruit orchards, and vineyards (Rambaldini 2005). Known prey include a large variety of beetles, centipedes, lepidopterans, moths, praying mantids, scorpions, and termites. Vertebrates, such as geckos, lizards, skink, and small rodents, are taken on occasion (Whitaker et al. 1981). They generally take terrestrial vertebrates, but will also take aerial pray. However, foraging style and diet composition vary within and between populations.

Females typically have one or two pups each year, although incidences of three pups have been reported. Mating generally occurs between October and February, followed by parturition from late April to July, and finally weaning in August. Timing of these events varies across latitudes and between years, and is probably influenced by prey availability and temperature. Populations at higher latitudes and in cooler climates give birth later in the season. Sexual maturity is reached approximately one year after birth, with females maturing quicker than males (Rambaldini 2005). In some cases sexual maturity may take as long as two years to obtain (AGFD 2002). Maternity colonies dissolve between weaning in August and the next mating season in October (Rambaldini 2005).

The pallid bat appears to be particularly sensitive to human disturbance during warm summer months when night roost temperatures are high. At cooler temperatures when their activity levels are low and their arousal rates are much slower, however, they are more tolerant of disturbance (Vaughan and O'Shea 1976). Disturbance of roosts, hibernacula, or maternity colonies is particularly damaging to pallid bats, as is the loss or modification of foraging habitat (Rambaldini 2005). Pesticides in particular have been implicated in the decline of pallid bat populations (AGFD 2002).

The Project area and nearby areas contain trees and man-made structures that may provide suitable roosting habitat for this species. In addition, the Project area provides foraging habitat for this species. The pallid bat was detected at seven of seventy-six sites surveyed from 1996 to 1998 in the mountains and foothills of southern California (including three sites on the ANF and four sites on the Los Padres National Forest), at elevations ranging from 1,100 to 6,600 feet (Stephenson and Calcarone 1999).

While there are no recent recorded sightings of this species within the project area, based on habitat suitability, this species has the potential to occur throughout the project. Segments in which pallid bat may occur are described below.

Segment A: This segment contains moderate shrub cover separated by open intershrub spaces, but does not contain an abundance of rocky roosting habitat. Pallid bat is expected to have a possibility of occurring along Segment A.

Segment B: This segment contains moderate shrub cover separated by open intershrub spaces, but does not contain an abundance of rocky roosting habitat. There are some houses along this segment that may provide roosting opportunities, along with agricultural fields which may serve as foraging habitat. Pallid bat is expected to be likely to occur along Segment B.

Segment C: This segment contains moderate shrub cover separated by open intershrub spaces, but does not contain appropriate rocky roosting habitat. The proposed ROW is partially cleared due to sharing the aqueduct ROW. Pallid bat is expected to be unlikely to occur along Segment C.

Segment D: This segment contains shrubs and grasslands in its northern segment outside of the ANF, with mostly chaparral and patches of coastal sage scrub on its southern segment. There are rocky outcrops within the lower section of this segment that may provide roosting opportunities, while grasslands in the upper section would provide foraging habitat if the animals can roost close enough. Pallid bat is expected to be likely to occur along Segment D.

Segment E: This segment contains open desert shrubs in its upper section and agricultural fields in its lower section. The shrub habitat may serve as foraging habitat for bats, while the farm buildings, such as barns, may provide roosting habitat. Pallid bat is expected to be likely to occur along Segment E.

Segment F: This segment contains mostly grassland with some scattered residences. There are some low shrubs throughout the area for foraging, but vegetation is mostly composed of low grasses, with no rocky outcrops. Pallid bat is expected to be unlikely to occur along Segment F.

Segment G: This segment contains large rock formations in San Francisquito Canyon, along with chaparral, grassland, and riparian habitat throughout different parts of the segment. The rock formations and existing buildings would provide roosting habitat for this species, while the chaparral and grassland would provide foraging habitat. Pallid bat is expected to be likely to occur along Segment G.

Segment 2a: This segment contains mostly dense chaparral in its northern portion and oak woodland surrounded by chaparral in its southern portion, with a perennial stretch of water in South Portal Creek. Pallid bat is expected to be unlikely to occur along Segment 2a.

Segment H: This segment contains mostly chaparral and grassland, with some aquatic habitat in Bouquet Canyon and around Bouquet Reservoir. There are residences and buildings throughout the ANF along Bouquet Canyon Road that may provide roosting habitat, but not an abundance of rocky outcrops. Pallid bat is expected to have a possibility of occurring along Segment H.

Segment I: This segment contains mostly chaparral and riparian habitat in its southern portion and is mostly chaparral, desert scrub, or grassland in its northern portion. There are many buildings along this segment on Sierra Highway that may provide roosting habitat. There are rocky outcrops along this segment that would also provide roosting habitat. Pallid bat is expected to be likely to occur along Segment I.

Segment J: This segment contains mostly chaparral, some patches of coastal sage scrub, and riparian habitat around Castaic Lake and Castaic Lagoon. There are some roosting opportunities around Castaic Lake and Lagoon, and some rocky outcrops around Castaic Power Plant, where this segment ends and Segment D continues. Pallid bat is expected to have a possibility of occurring along Segment J.

Segment K: This segment is mostly in urban or disturbed areas in its upper portion and in chaparral, oak savannah grassland, and oak woodlands in its southern portion. The northern portion has many roosting opportunities, but probably limited foraging opportunities, while the southern portion is the reverse. Pallid bat is expected to have a possibility of occurring along Segment K.

Segment 115: This segment is a combination of agricultural land and grassland. There are no rocky outcrops and little other roosting habitat. Vegetation is mostly very low grasses with sparse low shrubs. Pallid bat is expected to be unlikely to occur along Segment 115.

Townsend's Big-Eared Bat

Townsend's big-eared bat (*Corynorhinus townsendii*) is a Forest Service Sensitive species, Bureau of Land Management Sensitive species, Department of Fish and Game Species of Special Concern, and Western Bat Working Group High Priority species.

Townsend's big-eared bat occurs from sea level to 11,000 feet and is associated with a wide variety of habitat types, including coniferous forests, mixed deciduous forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types. It occurs throughout California in a variety of habitats, but is most commonly found in mesic sites. The distribution of Townsend's big-eared bats is strongly correlated with the availability of caves and cave-like roosting habitat, with population centers occurring in areas dominated by exposed, cavity-forming rock and/or historic mining areas (Stephenson and Calcarone 1999). Abandoned mines are particularly important where availability of well-developed caves is low (Stephenson and Calcarone 1999). This species may also roost in man-made structures (AGFD 2003a, Piaggio 2005, Reid 2006). Roosting sites are the most important limiting factor for this species. Summer maternity colonies are single-sex and range in size from a few individuals to several hundred individuals (Piaggio 2005). Winter hibernating colonies are composed of mixed-sex groups, which can range in size from a single individual to colonies of several hundred animals. Roosting site fidelity is largely dependent upon site availability. In coastal California regions, where roosting sites availability is found sparingly, fidelity is typically high.

Townsend's big-eared bat forages in association with edge habitats in proximity to a variety of woodlands. They are moth specialists with over 90% of their diet comprised of lepidopterans. These bats often travel large distances while foraging, including movements greater than 150 kilometers during a single evening. Evidence of large foraging distances and home ranges has also been documented in California (Piaggio 2005).

Mating generally takes place between October and February in both transitory migratory sites and hibernacula. Maternity colonies form between March and June and timing varies according to local climactic factors. A litter consists of a single pup born between May and July. Dispersal from natal ranges into others appears to primarily be mediated by males, while females remain in the general vicinity of their birthplace (i.e., philopatry).

This bat species is threatened by the loss of clean, open water, modification or destruction of roosting and foraging habitat, and disturbance or destruction of hibernacula, which has been recognized as the foremost threat to this species (Miner and Stokes 2005, Piaggio 2005).

The Project vicinity and nearby areas contain man-made structures that may provide suitable roosting habitat for Townsend's big-eared bats. In addition, the Project area contains suitable foraging habitat for this species. Little is known about the distribution and abundance of this species. The Townsend's big-eared bat was detected at six of seventy-six sites surveyed from 1996 to 1998 in the mountains and foothills of southern California (one site on the San Bernardino National Forest and five sites on the Cleveland National Forest) (Stephenson and Calcarone 1999). More importantly, it was found at fourteen abandoned mine locations in the northeastern San Bernardino Mountains, with fifty-five individuals observed in one mine (Stephenson and Calcarone 1999). Segments on which this species may occur are described below.

Segment B: This segment contains moderate shrub cover separated by open intershrub spaces, but does not contain an abundance of rocky roosting habitat. There are some houses along this segment that may provide roosting opportunities, along with agricultural fields which may serve as foraging habitat. Townsend's big-eared bat is expected to have a possibility of occurring along Segment B.

Segment D: This segment contains mostly grassland and shrubland in its northern portion with chaparral in its southern portion. There are rocky outcrops near Castaic Power Plant on the east side of Castaic Creek. Townsend's big-eared bat is expected to be likely to occur along Segment D.

Segment G: This segment contains large rock formations in San Francisquito Canyon, along with chaparral, grassland, and riparian habitat throughout different parts of the segment. Townsend's big-eared bat is expected to be likely to occur along Segment G.

Segment 2a: This segment contains mostly dense chaparral in its northern portion and oak woodland surrounded by chaparral in its southern portion, with a perennial stretch of water in South Portal Creek. There are some buildings nearby in San Francisquito Canyon. Townsend's big-eared bat is expected to be likely to occur along Segment 2a.

Segment H: This segment contains mostly chaparral and grassland, with some aquatic habitat in Bouquet Canyon and around Bouquet Reservoir and some woodlands within Bouquet Canyon, particularly around the reservoir. There are residences and buildings throughout the ANF along Bouquet Canyon Road that may provide roosting habitat, but not an abundance of rocky outcrops. Townsend's big-eared bat is expected to have a possibility of occurring along Segment H.

Segment I: This segment contains mostly chaparral and riparian habitat in its southern portion and is mostly chaparral, desert scrub, or grassland in its northern portion. There are many buildings along this segment on Sierra Highway that may provide roosting habitat. There are rocky outcrops along this segment that would also provide roosting habitat. Townsend's big-eared bat is expected to be likely to occur along Segment I.

Segment J: This segment contains mostly chaparral, some patches of coastal sage scrub, and riparian habitat around Castaic Lake and Castaic Lagoon. There are some roosting opportunities around Castaic Lake and Lagoon, and some rocky outcrops around Castaic Power Plant, where this segment ends and Segment D continues. Townsend's big-eared bat is expected to have a possibility of occurring along Segment J.

Segment K: This segment is mostly in urban or disturbed areas in its upper portion and in chaparral, oak savannah grassland, and oak woodlands in its southern portion. The northern portion has many roosting opportunities, but probably limited foraging opportunities, while the southern portion is the reverse. Townsend's big-eared bat is expected to have a possibility of occurring along Segment K.

Western Mastiff Bat

Western mastiff bat (*Eumops perotis californicus*) is a Bureau of Land Management Sensitive species, Department of Fish and Game Species of Special Concern, and Western Bat Working Group High Priority species.

It occurs throughout southern California, along the coast from Monterey County south, and along the California Central Valley (CDFG 2008d). It occurs in open semi-arid to arid habitats such as conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub, and urban areas. Roosting generally occurs in crevices in cliff faces, high buildings, trees, and tunnels, preferably with an opportunity to drop off vertically for flight. This species is non-migratory and will move between different roosts either alone or with a colony of other bats. Breeding will generally occur from early March, with birth occurring through September, although birth-giving dates can vary more for this species than for any other American bat species (CDFG 2008d). This species is nocturnal and catches and consumes insects while in flight. Individuals may travel up to 15 miles to foraging grounds from their roosts (Reid 2006).

Conifers and deciduous woodland tree species utilized as roosting habitat by the western mastiff bat are ubiquitous in some portions of the Project area. Additional potential roosting and forage habitat is provided by the wide-array of shrub species found both in and in close proximity to the Project area. Segments in which western mastiff bat may occur are described below.

Segment A: This segment contains large open patches of desert shrubs with existing transmission towers that may provide suitable roosting habitat. Western mastiff bat is expected to be likely to occur along Segment A.

Segment B: This segment contains large open patches of desert shrubs with some Joshua trees and existing transmission towers that may provide suitable roosting habitat. Western mastiff bat is expected to be likely to occur along Segment B.

Segment C: This segment contains large open patches of desert shrubs but does not contain existing transmission towers or many surrounding buildings for roosting habitat. Bats may travel to this area for foraging purposes but are not expected to be roosting in it. Western mastiff bat is expected to have a possibility of occurring along Segment C.

Segment D: This segment contains shrubs and grassland on its northern end and mostly chaparral with some riparian habitat in its southern end. There are no existing transmission towers in the northern end, but the southern end has five existing lines that may provide appropriate roosting habitat. There is also a patch of Joshua tree woodland in the northern section. Western mastiff bat is expected to be likely to occur along Segment D.

Segment E: This segment contains shrubs in its northern end and agricultural land in its southern end with associated buildings for roosting. There are transmission lines through this segment that may also provide roosting habitat. Western mastiff bat is expected to be likely to occur along Segment E.

Segment F: This segment contains mostly grassland with some low shrubs for foraging and some scattered buildings and an existing transmission line ROW for roosting. Western mastiff bat is expected to be likely to occur along Segment F.

Segment G: This segment contains chaparral, grasslands, and riparian areas, with rocky outcrops, buildings, existing transmission lines, and the remains of a large flume at LADWP's Power Plant 2 for roosting habitat. Western mastiff bat is expected to be likely to occur along Segment G.

Segment 2a: This segment contains mostly chaparral in its northern end and oak woodland surrounded by chaparral in its southern end. There are no existing transmission lines through here for roosting opportunities, although there are two along Segment G near this alternative. Western mastiff bat is expected to be unlikely to occur along Segment 2a.

Segment H: This segment contains mostly chaparral and grassland with some aquatic areas around Bouquet Canyon and Bouquet Reservoir. There is one existing transmission line through this segment and many buildings and residences in Bouquet Canyon. Western mastiff bat is expected to have a possibility of occurring along Segment H.

Segment I: This segment contains mostly chaparral in its lower end and chaparral and desert scrub in its northern end. There are several existing transmission lines and numerous communities along its length that may provide roosting opportunities. Western mastiff bat is expected to be likely to occur along Segment I.

Segment J: This segment contains mostly chaparral, with some riparian habitat around San Francisquito Creek, Castaic Lake, and Castaic Lagoon, and some patches of coastal sage scrub for foraging habitat. There are two existing transmission lines for roosting. Western mastiff bat is expected to have a possibility of occurring along Segment J.

Segment K: This segment contains mostly urban areas in its northern section and mostly chaparral, oak savannah, and grassland in its southern portion. There are several existing transmission lines along this segment for roosting opportunities and many buildings in the northern section. Western mastiff bat is expected to be likely to occur along Segment K.

Segment 115: This segment is a combination of agricultural land and grassland, with very low grasses and sparse low shrubs throughout its southern half. There are no roosting opportunities along this segment, and foraging habitat is marginal. Western mastiff bat is expected to be unlikely to occur along Segment 115.

Western Red Bat

Western red bat (*Lasiurus blossivillii*) is a Department of Fish and Game Species of Special Concern, Western Bat Working Group High Priority species, and is designated by the Regional Forester as a Forest Service Sensitive species.

Its range extends between North, Central, and South America, and it migrates south in the winter for hibernation. Western red bat is closely associated with riparian habitats, particularly those containing willows (*Salix* spp.), cottonwoods (*Populus* spp.) and sycamores (*Platanus racemosa*). This species utilizes riparian trees, shrubs, and leaf litter for roost sites (Stephenson and Calcarone 1999). Red bats roost at sites that provide coverage in every direction, except directly downwards, which allows them to drop from their roosting site to take flight. Other characteristics include the lack of perches below that would allow detection of and access by predators (scrub jays, falcons, accipiters, owls, roadrunners, opossums), the presence of dark ground cover beneath to reduce solar reflection into the roost, the presence and density of nearby vegetation to reduce dust and wind, and a south to southwest aspect (Bolster 2005).

Western red bats feed from the wing, taking such prey items as homopterans, coleopterans, hymenopterans, dipterans, and lepidopterans. Red bats generally begin to forage shortly after sunset. Although some may forage throughout the night, most typically have an initial foraging period followed by a resting period, which is then followed with another minor activity period corresponding to insects that become active several hours before sunrise (Bolster 2005).

Mating occurs in late summer or early fall, but females do not become pregnant until spring. Parturition lasts 80 to 90 days. Females may have litters of up to five pups per year, born between late May and mid-June (AGFD 2003b, Bolster 2005).

Agricultural conversion, reservoir construction, and urban expansion are possible sources of severe habitat loss within the winter and summer habitat of coastal Southern California, as is the loss of mature cottonwood habitat (AGFD 2003b, Miner and Stokes 2005). Disturbance to roosting sites can also have detrimental effects on western red bats.

Riparian tree species utilized as roosting habitat by the western red bat are ubiquitous in some portions of the Project area. Additional potential roosting and forage habitat is provided by the wide-array of shrub species found both in and in close proximity to the Project area. Segments in which western red bat may occur are described below.

Segment D: There is riparian habitat that is appropriate for this species in the southern portion of this segment, particularly around Castaic Creek. Western red bat is expected to be likely to occur along Segment D.

Segment G: There is riparian habitat that is appropriate for this species in San Francisquito Canyon, Bee Canyon, and Pettinger Canyon. Western red bat is expected to be likely to occur along Segment G.

Segment 2a: There is an oak woodland along a perennial stretch of South Portal Creek in this alternative. There are also other riparian tree species mixed in with the oak trees. Western red bat is expected to be likely to occur along Segment 2a.

Segment H: There are riparian trees throughout Bouquet Canyon along Bouquet Creek. Western red bat is expected to be likely to occur along Segment H.

Segment I: There are some riparian trees and vegetation along this segment's Sierra Highway portion and up in its mountainous areas. Western red bat is expected to be likely to occur along Segment I.

Segment J: There are some riparian trees along San Francisquito Canyon, Castaic Lake, and around Castaic Power Plant where this segment terminates. Western red bat is expected to be likely to occur along Segment J.

Segment K: There are many oak trees in the southern, forested portion of this segment. Western red bat is expected to be likely to occur along Segment K.

Western Yellow Bat

Western yellow bat (*Lasiurus xanthinus*) is a Department of Fish and Game Species of Special Concern and a Western Bat Working Group High Priority species.

The species is only known to occur from Los Angeles and San Bernardino Counties south to the Mexican border (CDFG 2008d). Known to occur in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats below 2000 feet in elevation. Roosting occurs in trees, and foraging occurs over water and among trees. This species is migratory and generally only occurs in California during migratory season. Births generally occur in June and July. This species is nocturnal and eats flying insects.

Based on the lack of reported sightings and available habitat, and the location of the Project relative to this species' range, western yellow bat is not expected to occur within the Project area.

San Diego Black-tailed Jackrabbit

San Diego black-tailed jackrabbit (*Lepus californicus bennettii*) is a Department of Fish and Game Species of Special Concern.

It occurs throughout lower elevation habitats, particularly in open forest, chaparral, and coastal sage scrub habitats (CDFG 2010; CDFG 2008d). While black-tailed jackrabbits are prevalent throughout all of California except the Sierra Nevada, this subspecies resides mainly in coastal southern California south to northern Baja California (Howard 1995). Home ranges are on average 45 acres in California, but vary depending on locales. Reproduction can occur throughout the year, though most births appear to take place in April and May, resulting in up to 16 young per female per year. This species is herbivorous and will eat grasses, forbs, and other vegetation depending on seasonal variation and availability.

Based on known occurrences and availability of suitable habitat, this species is expected to have a potential to occur throughout the southern portion of the project area, but not in the northern, desert portion of the project. Segments in which San Diego black-tailed jackrabbit may occur are described below.

Segment D: A black-tailed jackrabbit was observed by POWER approximately 0.4 mile from this segment in August 2009 in the Antelope Valley just north of State-Route 138. This segment contains a mixture of desert shrubs and annual grassland in its northern portion, and mixed chaparral with small patches of coastal sage scrub in its southern portion. San Diego black-tailed jackrabbit is expected to be present on Segment D.

Segment G: There are no reported sightings of this species along this segment, which contains a mixture of chaparral, riparian habitat, and annual grassland within the ANF and grassland north of the ANF. However, a POWER biologist in 2010 observed a black-tailed jackrabbit on Forest Road 7N01. Shrub habitat along this segment varies in density from sparse shrub cover to dense shrubs with minimal intershrub spaces. Because there are no recorded sightings on this segment, San Diego black-tailed jackrabbit is expected to have a possibility of occurring along Segment G.

Segment 2a: A POWER biologist in 2010 observed a black-tailed jackrabbit on Forest Road 7N01. Shrub habitat along this segment varies from dense shrub cover along the northeastern portion to less dense cover in the southwestern portion with riparian habitat. San Diego black-tailed jackrabbit is expected to be present along Segment 2a.

Segment H: There are no reported sightings of this species along this segment, which contains a mixture of chaparral and annual grassland within the ANF and grassland north of the ANF. Parts of this segment have burned within the last few years and still contain abundant open spaces. San Diego black-tailed jackrabbit is expected to have a possibility of occurring along Segment H.

Segment J: There is a reported sighting of this species on this segment within 0.25 mile of the centerline. Habitat consists mainly of chaparral, riparian areas, and patches of coastal sage scrub. San Diego black-tailed jackrabbit is expected to be present along Segment J.

Southern Grasshopper Mouse

Southern grasshopper mouse (*Onychomys tomidus ramona*) is a Department of Fish and Game Species of Special Concern.

It resides in arid desert habitats in the Mojave Desert and the California Central Valley (CDFG 2008d). Preferred habitat consists of alkali and desert scrub with low to moderate cover, although it can also occur less frequently in succulent shrub, washes, riparian areas, coastal scrub, mixed chaparral, and bitterbrush habitats. Peak breeding period is between May and July, although if conditions are optimal individuals may breed year-round. This species is nocturnal and eats almost only arthropods.

Based on known occurrences and availability of suitable habitat, this species is expected to have the potential to occur throughout much of the Project area. Segments in which southern grasshopper mouse may occur are described below.

Segment A: There are no recorded sightings of this species along this segment, which has long stretches of desert scrub. Southern grasshopper mouse is expected to have a possibility of occurring along Segment A.

Segment B: There are no recorded occurrences of this species along this segment, which has stretches of desert scrub and Joshua trees interrupted by roads and, in its southern end, agricultural fields. Southern grasshopper mouse is expected to have a possibility of occurring along Segment B.

Segment C: There are no recorded occurrences of this species along this segment, which has stretches of desert scrub and Joshua trees that are interrupted by roads. Vegetation is disturbed by grazing. There are several washes on this segment. Southern grasshopper mouse is expected to have a possibility of occurring along Segment C.

Segment D: There are no recorded occurrences of this species along this segment, which consists of desert scrub, Joshua trees, and grassland in its northern portion and chaparral and coastal sage scrub in its southern portion. Habitat is disturbed by the community of Neenach, State Route 138, Ridge Route, and other roads. Southern grasshopper mouse is expected to have a possibility of occurring along Segment D.

Segment G: There are no recorded occurrences of this species along this segment, which consists of grassland north of Elizabeth Lake in the Antelope Valley and mostly chaparral, grassland, and riparian habitat within the ANF. Major sources of disturbance are Elizabeth Lake Road, San Francisquito Canyon Road, and the existing transmission line access road, City Highline Motorway. Southern grasshopper mouse is expected to be unlikely to occur along Segment G.

Segment H: There are no recorded occurrences of this species along this segment, which consists of grassland in the Antelope Valley and mostly chaparral in the ANF. Vegetation is disturbed mainly by Bouquet Canyon Road and Del Sur Road. Southern grasshopper mouse is expected to be unlikely to occur along Segment H.

Segment I: There is one sighting of this species along this segment, but it is not recent enough to be dependable (CDFG 2010). Vegetation consists of chaparral and sandy streambeds in the southern portion and shrubs and grassland in the northern portion, and is disturbed by Vasquez Canyon Road, Sierra Highway, Elizabeth Lake Road, and many residences. Southern grasshopper mouse is expected to have a possibility of occurring along Segment I.

San Gabriel Mountains Bighorn Sheep

San Gabriel Mountains bighorn sheep (*Ovis canadensis nelsoni*) is a Forest Service Sensitive species and Bureau of Land Management Sensitive species.

It is widely distributed from the White Mountains in Mono County to the Chocolate Mountains in Imperial County, and prefers open, rocky, steep areas with available water and herbaceous forage.

Based on reported sightings and availability of suitable habitat, San Gabriel Mountains bighorn sheep is expected to be absent within the Project area.

White-Eared Pocket Mouse

The white-eared pocket mouse (*Perognathus alticolus alticolus*) is a Forest Service Sensitive species, Bureau of Land Management Sensitive species, and Department of Fish and Game Species of Special Concern.

It resides in ponderosa and Jeffrey pine habitats, and is also in mixed chaparral and sagebrush habitats in the San Bernardino and Tehachapi Mountains (CDFG 2008d). Its burrows are constructed in loose soil.

Based on reported sightings and availability of suitable habitat, this species is not expected to occur within the Project area.

Tehachapi Pocket Mouse

Tehachapi pocket mouse (*Perognathus alticolus inexpectatus*) is a Forest Service Sensitive species and Department of Fish and Game Species of Special Concern.

Its habitat includes arid annual grassland and desert shrub communities, but it can also reside in fallow grain fields and Russian thistle. The range extends from the Tehachapi Pass southwest towards Gorman, west to Cuddy Valley near Mount Pinos, and east along the San Gabriel Mountains to Elizabeth Lake. The Tehachapi pocket mouse forages on open ground and under shrubs. It aestivates and hibernates during extreme weather and burrows for cover and nesting in loose, sandy soils ranging between approximately 3500 and 6000 feet in elevation.

Based on reported sightings and availability of suitable habitat within this species' preferred regional range and elevation range, this species may occur on several of the Project's segments. Segments on which Tehachapi pocket mouse may occur are described below.

Segment A: There are no reported sightings near this segment, although it is near the species' range on its southern end and has long stretches of appropriate desert shrub habitat that is mostly uninterrupted except by State Route 58. This segment is slightly below the bottom end of this species' preferred elevation range. Tehachapi pocket mouse is expected to be unlikely to occur on Segment A.

Segment B: There are no recent reported sightings near this segment, although it is near the species' range on its northern end and has long stretches of appropriate desert shrub and grassland habitat that is mostly uninterrupted except for various residences and agricultural fields near its southern end. This segment is approximately 500 – 1000 feet below the bottom end of this species' preferred elevation range. Tehachapi pocket mouse is expected to be unlikely to occur on Segment B.

Segment C: There are no reported sightings near this segment, although it is near the base of the Tehachapi Mountains and has long stretches of appropriate desert shrub habitat that is mostly uninterrupted except by various residences and agricultural fields near its southern end. This segment is approximately 400 – 1000 feet below the bottom end of this species' preferred elevation range. Tehachapi pocket mouse is expected to have a possibility of occurring on Segment C.

Segment D: There are two recent reported sightings approximately six miles north of this segment in the Tehachapi Mountains (CDFG 2010). The northern section of this segment runs near the base of the Tehachapi Mountains and has stretches of appropriate desert shrub and grassland habitat interrupted by State Route 138, the California Aqueduct, and various residences such as those around the community of Neenach. This segment is approximately 400 – 1000 feet below the bottom end of this species' preferred elevation range, although there are areas within it that are within the elevation range. Tehachapi pocket mouse is expected to be unlikely to occur on Segment D.

Segment E: There are no recorded sightings of this species near this segment, which is desert scrub in its upper portion and agricultural fields and buildings in its southern portion. Tehachapi pocket mouse is expected to be unlikely to occur on Segment E.

Segment G: There are no recent recorded sightings of this species near this segment, which is just outside of the species' known range. The habitat in this area is grassland and chaparral that is interrupted by scattered residences and the community of Elizabeth Lake. This segment is on the edge of the species' preferred elevation range in this area. Tehachapi pocket mouse is expected to have a possibility of occurring on Segment G.

Segment 2a: There are no recent recorded sightings of this species near this segment, which is just outside of the species' known range. A historical sighting from 1938 is possibly extirpated (CDFG 2010).The habitat in this area is mainly dense chaparral. This segment is on the edge of the species' preferred elevation range in this area. Tehachapi pocket mouse is expected to have a possibility of occurring on Segment 2a.

Los Angeles Pocket Mouse

Los Angeles pocket mouse (*Perognathus longimembris brevinasus*) is a Forest Service Sensitive species and Department of Fish and Game Species of Special Concern.

It resides in lower-elevation grasslands and coastal sage communities in and around the Los Angeles basin, preferring open ground with sandy soils. It does not always dig extensive burrows, sometimes hiding under weeds and dead leaves instead. The Los Angeles pocket mouse is dormant during the winter months and does not always breed if poor environmental conditions exist.

Based on reported sightings and the availability of suitable habitat within its regional range and elevation range, Los Angeles pocket mouse is expected to be absent within the Project area.

Mohave Ground Squirrel

Mohave ground squirrel (*Spermophilus mohavensis*) is a state Threatened species.

Its range extends between Palmdale on the southwest, Lucerne Valley on the southeast, Olancha on the northwest, and the Avawatz Mountains on the northeast. Only a few records of the Mohave ground squirrel are known from west of Highway 14 where it is generally considered to be extirpated. The squirrel is threatened by loss and degradation of habitat due to clearing for agriculture and military activities and for urban, suburban, and rural development. Within the Mojave Desert, the WMP was established to conserve and protect the Mohave Ground Squirrel among other species..

It lives in open desert scrub, alkali scrub, and Joshua tree woodland, primarily feeding on leaves and seeds in annual grasslands restricted to the Mojave desert. It prefers sandy to gravelly soils, avoiding rocky areas and using burrows at the base of shrubs for cover. Nests are also contained within the burrows. Breeding does not typically occur in seasons with low rainfall, as plant availability can affect juvenile recruitment success.

Based on reported sightings and the availability of suitable habitat, this species is not expected to occur in most of the Project area. Segments in which Mohave ground squirrel may occur are described below.

Segment A: There is one reported sighting of this species approximately 2.25 miles from the proposed centerline of this segment (CDFG 2010). This segment contains long stretches of appropriate desert scrub and with scarce Joshua tree woodland habitat that is mostly undisturbed except by State Routes 14 and 58 (POWER 2008a). This segment is also completely within this species' distribution range. Mohave ground squirrel is expected to have a possibility of occurring along Segment A.

Segment B: There is one reported sighting of this species within 0.5 mile of this segment, which contains long stretches of appropriate desert scrub and high numbers of Joshua trees (CDFG 2010, POWER 2008a). This habitat is relatively undisturbed except for roads and, in its southern portion, agricultural fields and residences. This segment is just outside of this species' range at its northern end and increasingly far from the range as the line moves south. Mohave ground squirrel is expected to be likely to occur within Segment B.

Segment C: There is one reported sighting of this species within 2.5 miles of this segment, which contains long stretches of desert scrub habitat with moderately dense Joshua tree woodland, mostly in its northern end (CDFG 2010, POWER 2008). This habitat is within one mile of a large wind farm at its closest point, but is otherwise mostly undisturbed except for roads. Mohave ground squirrel is expected to have a possibility of occurring within Segment C.

American Badger

American badger (*Taxidea taxus*) are protected by the California state Fur-bearing Mammal Statute (§ 4000 – 4012) and regulations protecting CDFG Species of Special Concern.

This species is distributed throughout California in open habitats containing friable soil for burrowing, except for the northern coast regions. It occurs in highest densities in relatively dry, open stages of shrub, forest, and herbaceous habitats (CDFG 2008d). American badger ranges average from 400 acres for females to 600 acres for males. This species functions to control rodent populations in their respective ecosystems (CDFG 2008d). American badgers are vertically compressed mustelids that prey chiefly on fossorial rodents, though reptiles, insects, birds and their eggs, carrion, and other items are also taken (Reid 2006).

Based on reported sightings and availability of suitable habitat, this species is expected to have a potential to occur along all segments of the Project area. Segments in which American badger may occur are described below.

Segment A: Segment A: There are no reported sightings of this species along this segment, which consists of mostly Mojave creosote bush scrub. American badger is expected to be likely to occur along Segment A.

Segment B: Surveys for SCE's Antelope-Pardee line in 2007 identified two active burrows and one inactive burrow within two miles of this segment (LSA 2007e). This segment contains long patches of Mojave creosote scrub with patches of rabbitbrush scrub, Mojave mixed woody scrub, and desert native grassland; the bottom of the segment contains more non-native annual grassland. American badger is expected to be present along Segment B.

Segment C: An active badger burrow was identified on this segment during desert habitat surveys conducted in 2008 (POWER 2009c), while a possible second active burrow was identified within 1.5 miles of this segment in 2007 during American badger surveys for SCE's Antelope-Pardee line (LSA 2007e). Habitat is primarily composed of creosote bush scrub and Joshua tree woodland, with pockets of Mojave mixed scrub at the northern end and pockets of semi-desert chaparral at the southern end. American badger is expected to have a possibility of occurring along Segment C.

Segment D: There are two recent reported sightings of this species near this segment, along with two historical sightings of individuals within the segment (CDFG 2010). Habitat consists of chaparral and non-native grassland interspersed with pockets of semi-desert chaparral, Mojave creosote bush scrub, Mojave mixed woody scrub, desert saltbush scrub, and rabbitbrush scrub in its northern end. The southern end contains a mixture of chaparral with pockets of coastal sage scrub and urbanized areas around Castaic Lake and Castaic Lagoon. American badger is expected to be likely to occur along Segment D.

Segment E: A badger burrow was identified on this segment during desert habitat surveys conducted in 2008 (POWER 2009c). This segment contains a mixture of desert scrub, agricultural fields, and associated residences and buildings. American badger is expected to have a possibility of occurring along Segment E.

Segment F: There are no reported sightings of this species along this segment, which contains mostly grassland along with isolated residences. American badger is expected to have a possibility of occurring along Segment F.

Segment G: There are no reported sightings of this species along this segment, which contains mostly mixed chaparral, chamise chaparral, non-native grassland, and riparian areas in its southern ANF portion and open grassland with sparse low shrubs in its northern portion. American badger is expected to have a possibility of occurring along Segment G.

Segment H: There are no reported sightings of this species along this segment, which contains mostly chaparral and riparian areas in its ANF portion and open grassland with low shrubs in its northern portion. American badger is expected to have a possibility of occurring along Segment H.

Segment I: There are no reported sightings of this species along this segment, which contains mostly chaparral in its southern portion and open grassland with sparse shrubs in its northern, Antelope Valley portion. American badger is expected to have a possibility of occurring along Segment I.

Segment J: There are no reported sightings of this species along this segment, which contains mostly chaparral, coastal sage scrub, and annual grassland. Habitat for this species may be present west of San Francisquito Canyon within this segment. American badger is expected to be unlikely to occur along Segment J.

Segment K: There are no reported sightings of this species along this segment, which contains a highly disturbed suburban area in its northern end and mixtures of chaparral and oak woodland in the southern portion. American badger is expected to be unlikely to occur along Segment K.

Segment 115: There are no reported sightings of this species along this segment, which is a combination of agricultural land and grassland. The grassland is flat and vegetation is very low. The California Aqueduct passes through the southern portion of the segment. American badger is expected to have a possibility of occurring along Segment 115.

Desert Kit Fox

Desert kit fox (*Vulpes macrotis arsipus*) are protected by the California state Fur-bearing Mammal Statute (§ 4000 – 4012).

Desert kit fox range in the USA extends from southern California to western Colorado and west into Texas. Its northern range includes southern Oregon and Idaho. The kit fox is associated with multiple habitats, including desert scrub, saltbush, chaparral and grassland. They are mainly nocturnal, and use multiple burrows in their home range. Natal dens possess multiple entrances (Egoscue 1962). While the species is territorial the primary resource of concern is the natal den which requires a significant level of energy to excavate compared to a single burrow. Kit foxes are small canids that feed primarily on black-tailed jackrabbits, desert cottontails, kangaroo rats, ground squirrels, insects, reptiles, birds and bird eggs.

Based on reported sightings and availability of suitable habitat, this species is expected to be present in the some desert segments of the Project and have a potential to occur in other segments. Segments in which desert kit fox may occur are described below.

Segment A: Several signs of this species were located along this segment during 2008 desert habitat surveys, including scat, a natal den, multiple burrows, and skeletal remains (POWER 2009c). This segment consists of mostly Mojave creosote bush scrub. Desert kit fox is expected to be likely to occur along Segment A.

Segment B: Multiple indications of this species were located along this segment during 2008 desert habitat surveys, including a natal den (POWER 2009c). Habitat consists mostly of Mojave creosote scrub with pockets of Mojave mixed woody scrub, rabbitbrush scrub, and desert native grassland in its northern end, with more agricultural, desert saltbrush scrub, and non-native annual grassland in the southern end. Desert kit fox is expected to be likely to occur along Segment B.

Segment C: Multiple signs of this species were located along this segment during 2008 desert habitat surveys, including three natal dens, scat, a burrow, and a skull (POWER 2009c). Habitat consists of mostly creosote bush scrub and Joshua tree woodland, with patches of Mojave mixed scrub at the northern end and semi-desert chaparral at the southern end. Desert kit fox is expected to be likely to occur along Segment C.

Segment D: There are no reported sightings of this species along this segment, although suitable open scrub and grassland habitat occur throughout the northern end. The southern end consists mainly of chaparral and patches of coastal sage scrub. There were also abundant rodent signs located during 2008 desert habitat surveys, representing a food source for this species (POWER 2009c). Desert kit fox is expected to be likely to occur along Segment D.

Segment E: Two burrows were identified along this segment during 2008 desert habitat surveys (POWER 2009c). Habitat on this segment consists of agricultural land, non-native grassland, and Mojave creosote scrub. Desert kit fox is expected to be likely to occur along Segment E.

Segment F: There are no reported sightings of this species along this segment, although it contains appropriate habitat in non-native grassland, along with agricultural land. Desert kit fox is expected to have a possibility of occurring along Segment F.

Segment G: There are no reported sightings of this species along this segment, although it contains appropriate habitat in non-native grassland in its northern end. Its southern end consists of chaparral, non-native grassland, riparian habitat, and residences and other buildings. Desert kit fox is expected to have a possibility of occurring along Segment G.

Segment H: There are no reported sightings of this species along this segment, although it contains appropriate habitat in non-native grassland in its northern end. Its southern end consists mainly of chaparral and riparian areas. Desert kit fox is expected to have a possibility of occurring along Segment H.

Segment I: There are no reported sightings of this species along this segment, although it contains appropriate habitat in non-native grassland in its northern end, which also includes scrub oak chaparral, northern mixed chaparral, Riversidian sage scrub, Mojavean pinyon and juniper woodlands, and semi-desert chaparral. Its southern end consists of mainly chaparral, Riversidian sage scrub, desert salt scrub, and non-native grassland. Desert kit fox is expected to have a possibility of occurring along Segment I.

Segment 115: There are no reported sightings of this species along this segment, which is a combination of agricultural land and grassland. The grassland is flat and vegetation is very low. The California Aqueduct passes through the southern portion of the segment. Desert kit fox is expected to have a possibility of occurring along Segment 115.

Fish

Santa Ana Sucker

The Santa Ana sucker (*Catostomus santaanae*) is a federally Threatened species and Department of Fish and Game Species of Special Concern.

It is a habitat generalist, but prefers sand-rubble-boulder bottoms, cool clear non-turbid or seasonally-turbid water, and algae. Its range extends through sections of the Santa Ana, San Gabriel, and Santa Clara rivers, in addition to their tributaries.

Based on reported sightings and availability of suitable habitat, this species is not expected to occur throughout most of the Project area. Segments in which Santa Ana sucker may occur are described below.

Segment D: There are no reported sightings of this species along this segment. While there is some potential habitat along the streams in this segment, 2008 and 2009 surveys found that areas upstream and downstream of where the access road along the existing transmission lines crosses streambeds were intermittently dry. This would reduce the likelihood of there being a population of this species that would be present during construction. Santa Ana sucker is expected to be unlikely to occur along Segment D.

Segment G: This species has been documented in the Drinkwater and St. Francis Dam reaches of lower San Francisquito Creek, where it is present in an unprotected population (65 FR 19686 19698). POWER biologists observed this population during most of several dozen visits to the Drinkwater reach in spring and summer 2009, where water from the outflow of the Drinkwater Reservoir keeps this area perennially flowing for an isolated portion of the creek. USGS biologists have identified this species as recently as 2008 in the St. Francis Dam reach of the creek, where deep natural and artificial ponds have been created that hold water perennially in a dense riparian stretch. However, upstream of these two isolated portions, San Francisquito Creek is not known to be perennial until north of Bee Canyon, and the stretch of creek in between is intermittent and dry most of the year. Multiple arroyo toad and California red-legged frog protocol surveys in 2008 and 2009 at multiple locations throughout this stretch of San Francisquito Creek failed to incidentally observe any Santa Ana sucker in the areas upstream of the known population. Santa Ana sucker is expected to be unlikely to occur along Segment G.

Segment 2a: This species is not known to occur in this area, but there is a perennial stretch of South Portal Creek in this alternative that contains rocky substrates. Santa Ana sucker is expected to be unlikely to occur along Segment 2a.

Segment I: There are no reported sightings of this species along this segment, which contains several miles of potentially suitable habitat within Vasquez Canyon and alongside Sierra Highway. However, these streambeds were not observed to be flowing during any of the various surveys which were conducted in 2008 and 2009 for this project, and may not be able to support a population if there are no perennial water sources. Santa Ana sucker is expected to be unlikely to occur along Segment I.

Segment J: There are no reported sightings of this species along this segment, which crosses over Dry Canyon, San Francisquito Canyon, Charlie Canyon, and Bitter Canyon, none of which is perennial at the point of cross-over. These streambeds vary between sandy and rocky substrates, but may provide appropriate habitat when sufficiently inundated. Santa Ana sucker is expected to be unlikely to occur along Segment J.

Segment K: There are recorded sightings of this species several miles away from this segment in the Santa Clara River, which contains an abundance of sandy stream habitat with riparian vegetation. However, the Santa Clara River at this segment is only seasonally flowing, and would probably not support a population in this specific area. Santa Ana sucker is expected to be unlikely to occur along Segment K.

Unarmored Threespine Stickleback

Unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*) is a federally and state Endangered species, as well as a Department of Fish and Game Fully Protected species.

It inhabits weedy pools, backwaters, and emergent vegetation at the stream edge of small southern California streams, preferring cool water (generally lower than 27°C) with abundant vegetation. Its range contains a small part of the upper Santa Clara River and the San Antonio Creek.

Based on reported sightings and availability of suitable habitat, this species is not expected to occur throughout most of the Project area. While there has historically been a population of this species in San Francisquito Creek, CDFG and USGS determined that the population has been extirpated after severe flooding in 2005 (CDFG 2010), although San Francisquito Creek is still listed as occupied habitat by USFS. Segments in which unarmored threespine stickleback may occur are described below.

Segment H: There have been several reported sightings of this species along Bouquet Creek and its tributaries (CDFG 2010). Although these sightings have all been from Texas Canyon and south, where the segment is distanced from the creek, it is reasonable to expect that the species may swim upstream in Bouquet Creek where the project is closer to the creek. Unarmored threespine stickleback is expected to be present along Bouquet Creek, which parallels Segment H.

Segment I: There have been several reported sightings of this species in Bouquet Creek as close as 0.12 mile from a potential access road (CDFG 2010). Unarmored threespine stickleback is expected to be present along Segment I.

Segment K: There have been multiple reported sightings of this species as close as one mile from this segment in the Santa Clara River. However, this river is intermittently dry, and depending on the timing of construction, fish may or may not be present close to this area. Unarmored threespine stickleback is expected to be likely to occur along Segment K.

Arroyo Chub

Arroyo chub (*Gila orcutti*) is a Forest Service Sensitive species and Department of Fish and Game Species of Special Concern.

It lives in Los Angeles Basin south coastal streams, in slow water stream sections with mud or sand bottoms. It feeds heavily on aquatic vegetation and associated invertebrates. Breeding occurs fairly continuously between February and August, with spawning occurring in waters typically between 14 and 22°C. Their diet includes algae, small insects, and other invertebrates.

Based on reported sightings and availability of suitable habitat, this species is not expected to occur throughout most of the Project area. Segments in which arroyo chub may occur are described below.

Segment D: There are no reported sightings along this segment, but there are isolated spots of appropriate sandy stream bottoms which will have to be crossed for access. However, these areas are believed to be dry most of the year based on 2008 and 2009 surveys and may not support a population of the fish. Arroyo chub is expected to be unlikely to occur along Segment D.

Segment G: This species has been recorded in the Drinkwater and/or Dam Reaches of San Francisquito Creek for the last decade (USGS 2002, USGS 2003, USGS 2004, USGS 2005a, USGS 2005b, USGS 2007, USGS 2008, USGS 2010, USGS 2011). However, upstream of this isolated portion, San Francisquito Creek is not known to be perennial until north of Bee Canyon. The area between Bee Canyon and the known population is intermittent and has been observed to be dry most of the year. Forest Road 5N27, which crosses San Francisquito Creek and allows alternate access between San Francisquito Canyon and Segment G, will not be used by construction. The ANF Land Management Plan (USFS 2005) considers this species to be present within San Francisquito Creek, although it is unclear if it is believed or known to be present anywhere in San Francisquito Creek upstream of Forest Road 5N27. The access road through Bee Canyon will be used by construction. This would cross through San Francisquito Creek, but multiple arroyo toad and California red-legged frog protocol surveys in 2008 and 2009 at multiple locations in this stretch of the creek failed to incidentally observe any arroyo chub. Arroyo chub is expected to have a possibility of occurring along Segment G.

Segment I: There are no reported sightings of this species along this segment, which contains several miles of potentially suitable habitat within Vasquez Canyon and alongside Sierra Highway. However, these streambeds were not observed to be flowing during any of the various surveys which were conducted in 2008 and 2009 for this project, and may not be able to support a population if there are no perennial water sources. Arroyo chub is expected to be unlikely to occur along Segment I.

Segment J: There are no reported sightings of this species along this segment, which passes over Dry Canyon, San Francisquito Canyon, Charlie Canyon, and Bitter Canyon. None of these canyons has perennially-flowing water at the point that the power lines pass over. The streambeds contain combinations of sand and/or rock. The ANF Land Management Plan (USFS 2005) considers this species to be present within San Francisquito Creek, although it is unclear if it is believed or known to be present in San Francisquito Creek at the point that this Project component crosses the creek. Arroyo chub is expected to have a possibility of occurring along Segment J.

Santa Ana Speckled Dace

Santa Ana speckled dace (*Rhinichthys osculus*) is a Forest Service Sensitive species and Department of Fish and Game Species of Special Concern.

It inhabits the headwaters of the Santa Ana and San Gabriel Rivers, but may have been previously extirpated from the Los Angeles River system. It requires permanent flowing streams with summer water temperatures approximately 17 – 20°C, and usually resides in shallow cobble and gravel riffles.

Because it is not known to be present within the Santa Clara River or its tributaries, the Santa Ana speckled dace is expected to be absent within the Project area.

Reptiles

California Legless Lizard

California legless lizard (*Anniella pulchra*) is designated by the Regional Forester as a Forest Service Sensitive species, and is also listed by the California Department of Fish and Game as a Species of Special Concern.

California legless lizard is a fossorial species associated with sandy or loose loamy soils under the sparse vegetation of coastal strand, chaparral, coastal sage scrub or pine-oak woodland, or under sycamores and cottonwoods in riparian areas (Jennings and Hayes 1994). It also occurs in desert scrub along the western edge of the Mojave Desert near Lancaster and in western portions of the Anza-Borrego Desert State Park. California legless lizards are often found under surface cover such as logs, rocks, and leaf litter, where soil moisture is high, as this characteristic is apparently essential to their survival (Stephenson and Calcarone 1999). Fisher and Case (Stephenson and Calcarone 1999) described finding California legless lizards at several locations in the eastern Santa Ana Mountains (Indian Canyon, Ortega Highway, and upper Tenaja Truck Trail) within oak woodland, chaparral, and coastal scrub vegetation in decomposing granitic soils. They suggested that the distribution of these lizards in foothill and lower montane habitats may be closely tied to this friable substrate type.

Legless lizards are reasonably tolerant to lower temperatures, preferring temperatures between 20 and 25°C but remaining active above 13°C (Fellers 2009). This allows them to be active on cool days when potentially competing species (e.g., juvenile alligator lizards, skinks) remain inactive. Individuals from coastal and southern localities are probably active year-round with only brief periods of winter inactivity. Lizards from cooler locales (e.g., the Sierra foothills) undergo winter hibernation.

Reproduction begins with mating activities in late spring or early summer. The gestation period is about four months (Jennings and Hayes 1994). Live young are usually born from September to October, and occasionally into November. Litter size ranges from one to four but two is common (Stebbins 2003).

Based on the lack of reported sightings and the availability of suitable habitat, this species is not expected to occur throughout most of the Project area. Segments in which it may occur are described below.

Segment D: There are no reported sightings of this species within this segment, which contains isolated patches of possibly suitable habitat. California legless lizard is expected to be unlikely to occur along Segment D.

Segment G: There are no reported sightings of this species within this segment, which contains possibly suitable habitat in various locations near or within streambeds. California legless lizard is expected to be unlikely to occur along Segment G.

Segment H: There are no reported sightings of this species within this segment, which may contain suitable habitat around Haskell Canyon. California legless lizard is expected to be unlikely to occur along Segment H.

Segment I: There are no reported sightings of this species within this segment from within the last ten years (CDFG 2010). However, this segment contains large patches of sage scrub mixed with other habitat types which may have loose, sandy soils nearby enough to provide suitable habitat. California legless lizard is expected to have a possibility of occurring along this segment.

Segment J: There are no reported sightings of this species within this segment, but appropriate habitat exists in Dry Canyon and Charlie Canyon. These areas contain sandy substrates—Dry Canyon is also rocky—with coast live oak woodland interspersed throughout the streambed. Charlie Canyon also contains cottonwood (*Populus fremontii*) and *Eucalyptus* trees along its streambed. California legless lizard is expected to have a possibility of occurring along Segment J.

Southern Rubber Boa

Southern rubber boa (*Charina bottae umbratica*) is a state Threatened and Forest Service Sensitive species.

It is restricted to the San Bernardino, San Jacinto, and Tehachapi Mountains, and is found in a variety of montane forest habitats between approximately 5000 and 8200 feet in elevation. It is usually found near streams or wet meadows, requiring loose, moist soil for burrowing. It can also seek cover in rotten logs. Breeding occurs between April and June, with birth in late summer to early autumn. The southern rubber boa's diet consists of small mammals, birds, and lizards.

Based on its appropriate range and habitat, southern rubber boa is expected to be absent within the Project area.

Southwestern Pond Turtle

Southwestern pond turtle (*Actinemys marmorata pallida*) is designated by the Regional Forester as a Forest Service Sensitive species, and is also listed by the California Department of Fish and Game as a Species of Special Concern.

Southwestern pond turtles are scarce anywhere above 5,000 feet (Holland 1994) and generally inhabit low-elevation aquatic habitats below 4,000 feet (Stephenson and Calcarone 1999). In Southern California, southwestern pond turtles are primarily found in rivers and streams that have persistent deep pools or in lacustrine habitats (Holland 1994). However, they are also known to live within disturbed or altered habitat, such as reservoirs, gravel pits, stock ponds, and sewage treatment plants, although these animals are often merely displaced (Holland 1994). Pond turtles regularly utilize upland terrestrial habitat, most often during the summer and winter, especially for oviposition (females), mate seeking (males), overwintering, seasonal terrestrial habitat use, and overland dispersal. Most often, overland movement events are part of normal turtle movements within a terrestrial home range, but pond turtles regularly overwinter in uplands, burying themselves beneath the leaf litter. Overwintering sites can be as far as 500 meters from typical watercourses on slopes that range from 0 to 35° and in Southern California are typically utilized for only a month or two before turtles return to the water (Holland 1994). In general, males have exhibited larger home ranges than females (Reese 1996). In a study conducted by Reese (1996) on the Trinity River, male linear home ranges averaged approximately 1,141 meters between the mainstem and south fork of the Trinity River, while females averaged approximately 569 meters; thus, males were observed by Reese (1996) to have average home ranges twice as large as females.

Pond turtle egg laying occurs from late April through August, with a peak period in June to mid-July. Females build nests between 10 to 12 centimeters deep, in dry, well-drained clayey, loamy, or silty soils (Holland 1994, Reese 1996, Spinks et al. 2003, Bettelheim 2005). Females seem to prefer to build nests on slopes less than 15° (Spinks et al. 2003), but have been observed to range up to 60° (Holland 1994). They are built on south- or west-facing slopes, although nests have been known to face west or northwest (Holland 1994, Buskirk 2002, Bettelheim 2005), at distances ranging from 1.5 to 402 m (average of 45 m) away from water (Holland 1994, Spinks et al. 2003, Bettelheim 2005). Females leave the watercourse in late afternoon and evening, and travel into adjacent wetland margins or uplands to build nests. Most females are believed to oviposit in alternate years, although instances of turtles laying up to two clutches in one year have been recorded in southern and central California (Holland 1994, Ashton et al. 1997, Buskirk 2002, Bettelheim 2005). Once the one to 14 eggs—four to seven eggs on average (Ashton et al. 1997)—are laid in a shallow hole, the female covers it with dirt. Incubating eggs are extremely sensitive to increased soil moisture, which is absorbed by eggs and can subsequently cause them to explode from increased internal pressure (Ashton et al. 1997, Bettelheim 2005). Additionally, nests are highly susceptible to predators as well as to trampling by cattle or people. Hatchlings emerge in approximately 12 weeks.

Hatchling and small juvenile pond turtles require specialized microhabitats characterized by shallow water (usually less than 30 centimeters deep), presence of emergent vegetation, and clusters of small branches in the water. Reese (1996) found that hatchlings and juveniles were more likely to be found in warm, slow-moving portions of river channels (backwater pools, side channels, edgewater pools), ponds, or vernal pools.

Based on reported sightings and availability of suitable habitat, this species is not expected to occur in most of the project area. Segments in which southwestern pond turtle may occur are described below.

Segment D: In fall 2009 a population of at least 17 southwestern pond turtles were discovered in Castaic Creek adjacent to Castaic Power Plant and were relocated upstream in Fish Canyon and Cienaga Canyon. While the turtles may move back downstream, it is unlikely that they will move up the opposite ridge toward this segment. However, there may be other areas throughout the segment which contain suitable habitat along the streambed, although all stream sections observed in 2008 and 2009 have been intermittent stretches. Southwestern pond turtle is expected to be unlikely to occur along Segment D.

Segment G: This species was observed by USGS in San Francisquito Creek in 2007, although non-BRRTP surveys in 2009 failed to locate it. It was also located in 2001 north of the site of the St. Francis Dam in 2001 (PCR Services Corporation 2001). Appropriate habitat for this species exists throughout San Francisquito Creek, in a riparian area north of Drinkwater Flats, and in the lower portion of South Portal Canyon. Southwestern pond turtle is expected to be present along Segment G.

Segment I: There are multi-year sightings of a population of this species within one mile of this segment, which at the time was threatened by development and the adjacent Elizabeth Lake Road (CDFG 2010). This area may still be intact and may still support individuals of this species. Southwestern pond turtle is expected to have a possibility of occurring along Segment I.

Segment J: In fall 2009 a population of at least 17 southwestern pond turtles were discovered in Castaic Creek adjacent to Castaic Power Plant and were relocated upstream in Fish Canyon and Cienaga Canyon. It is likely that the turtles will move back downstream, and it is also likely that they laid eggs in the hillsides surrounding the creek (Hovey, personal communication 2009). However, it is unlikely that this species would choose to move south of Castaic Creek into the Project area—which is separated from the creek by the Castaic Power Plant and its facilities, an employee parking lot, and equipment and material staging areas—instead of move into the relatively undisturbed hills immediately north of the creek. Southwestern pond turtle is expected to be unlikely to occur along Segment J.

San Bernardino Ringneck Snake

San Bernardino ringneck snake (*Diadophis punctatus modestus*) is a Forest Service Sensitive species.

It is most commonly found in open, rocky areas, often in somewhat moist microhabitats near intermittent streams. It avoids moving through open or barren areas by restricting movements to areas of surface litter or herbaceous vegetation.

Based on reported sightings and the availability of suitable habitat, this species is not expected to occur throughout most of the Project area except possibly Segment G. Segment G may contain suitable open rocky areas in San Francisquito Canyon west of San Francisquito Canyon Road across from St. Francis Dam reach. The Dam reach may also contain appropriate habitat on its southern end, where there is a very open area with intermittent flow and rocky habitat. San Bernardino ringneck snake is expected to have a possibility of occurring throughout Segment G.

Desert Tortoise

Desert tortoise (*Gopherus agassizii*) is a federal and state Threatened species.

Its range includes the Mojave and Sonoran Deserts. It is most common in desert scrub, creosote bush scrub, desert wash, and Joshua tree habitats, though it occurs in almost every desert habitat below 3530 feet in elevation. Tortoises typically inhabit soft sandy loams and loamy sands, although they are also found on rocky slopes and in rimrock that provide natural-cover sites in crevices. It requires friable soil for burrowing and nest construction. Mating season peaks from August to October, though sexual maturity does not occur until 15-20 years of age. Diets typically consist of herbs, grasses, cactus, and wildflowers, and foraging occurs in the spring before aestivation in the summer. Desert tortoises emerge again in the fall with the cooler weather, absorbing water from their bladders if no major thunderstorms have occurred lately. Aestivation occurs again in the winter (Jennings 1997).

Local records of occurrence exist for the desert tortoise, and suitable habitat is present in the northern portion of the Project area, including Segments A, B, C, and E, with remnant habitat adjacent to portions of Segment D. Below is a discussion of the 2008 survey results and a description of segments on which this species may occur.

Segment A: An apparently healthy desert tortoise of unknown sex was found inside a burrow with a six inch by 12 inch entrance (POWER 2009c). Multiple potential desert tortoise burrows were observed throughout this route and a single occurrence of desert tortoise scat was found. Segment A contains many desert washes, which are typically considered good habitat for desert tortoises. Desert tortoise is expected to be present along Segment A.

Segment B: A single potential desert tortoise burrow was detected in Segment B (POWER 2009c). While the route did contain patches of suitable habitat, disturbance types known to negatively impact the species (OHV and grazing) were present in many areas of the Segment. The many washes found in the route are likely places for desert tortoises if they are present. The agricultural areas and developed areas south of mile point (MP) 11.8 do not contain suitable habitat for this species. Desert tortoise is expected to have a possibility of occurring along Segment B.

Segment C: Two potential desert tortoise burrows were found in mixed Joshua tree woodland and Mojave creosote bush scrub (POWER 2009c). Suitable habitat occurs only in patches throughout Segment C due to disturbance from the aqueducts, associated roadways and construction waste. The majority of this

Segment is unlikely to possess quality desert tortoise habitat because of the high degree of grazing and other forms of disturbance. Desert tortoise is expected to have a possibility of occurring along Segment C.

Segment D: Suitable habitat for this species exists in approximately the six most northernmost miles, but is absent from the remaining southern portion. Desert tortoise is expected to have a possibility of occurring along Segment D.

Segment E: No desert tortoise or desert tortoise sign were observed in this Segment. Desert tortoise is expected to be unlikely to occur along Segment E.

San Bernardino Mountain Kingsnake

San Bernardino Mountain kingsnake (*Lampropeltis zonata parvirubra*) is a Forest Service Sensitive species and Department of Fish and Game Species of Special Concern.

Its range includes the San Jacinto, Santa Rosa, San Bernardino, Santa Susana, and San Gabriel Mountains, and the Verdugo Hills. It typically resides in big cone spruce and chaparral at lower elevations, or black oak, incense cedar, Jeffrey pine, and Ponderosa pine at higher elevations. It prefers well-lit canyons with rocky outcrops or rocky talus. On Mt. San Jacinto, the San Bernardino Mountain king snake has been known to occur from between 800 and 9000 feet in elevation. Winter hibernation typically occurs between November and anywhere from February to April. Breeding occurs a few weeks after emergence in the spring, and diet consists of lizards, small mammals, nestling birds, bird eggs, amphibians, and other snakes.

Based on recorded occurrences, availability of suitable habitat, and regional range, San Bernardino Mountain kingsnake is expected to be absent within the Project area. Only Segment K is within the San Gabriel Mountains, and it does not contain suitable habitat within this species' preferred elevational range.

Coastal Rosy Boa

Coastal rosy boa (*Lichanura trivirgata roseofusca*) is designated by the Regional Forester as a Forest Service Sensitive species and Bureau of Land Management Sensitive species.

The coastal rosy boa is primarily associated with rocky habitat in scrub and chaparral, and in the mountains is often found in canyons and washes (Stephenson and Calcarone 1999, Stebbins 2003, CDFG 2008d). It is common in riparian areas, but does not seem to be obligated to permanent water sources (California Herps 2009). It lives in desert and chaparral from the coast to the Mojave and Colorado Deserts. It prefers moderate to dense vegetation and rocky cover, and habitats with a mix of brushy cover and rocky soil such as coastal canyons and hillsides, desert canyons, washes, and mountains. The coastal rosy boa occurs from the foothills of the San Gabriel and San Bernardino Mountains, south through Orange, Riverside, and San Diego Counties.

Coastal rosy boas prefers intermediate temperatures, emerging during dawn, morning, dusk, and at night, but remaining inactive and in a burrow during particularly hot or cold periods. Young are live born during the months of October and November, typically with three to fourteen at a time (Stebbins 2003). Diet consists of small mammals, reptiles, amphibians, and birds. Diet consists of rodents, small birds, lizards, small snakes, and amphibians.

Based on reported sightings and availability of suitable habitat, this species may occur in throughout much of the Project area. Segments in which coastal rosy boa is expected to occur are described below.

Segment A: There are no reported sightings of this species within this segment and this segment may be outside of this subspecies' range, but there is suitable desert wash habitat along this segment, which is near the base of the Tehachapi Mountains. Coastal rosy boa is expected to be unlikely to occur along Segment A.

Segment B: There are no reported sightings of this species within this segment, but there is suitable, yet disturbed, desert wash habitat along this segment. Coastal rosy boa is expected to have a possibility of occurring along Segment B.

Segment C: There are no reported sightings of this species within this segment, but there is some suitable desert habitat along this segment, which is near the base of the Tehachapi Mountains. This habitat, however, is also disturbed by grazing. Coastal rosy boa is expected to be likely to occur along Segment C.

Segment D: There are no reported sightings of this species within this segment, but there is suitable desert habitat along the northern half of this segment, which is near the base of the Tehachapi Mountains. The southern half of this segment contains abundant chaparral and is near water sources such as Castaic Lake. Coastal rosy boa is expected to be likely to occur along Segment D.

Segment G: This species was observed on this segment in summer 2009 by a POWER biologist. This segment contains both abundant chaparral and some rocky patches in San Francisquito Canyon around the area of the St. Francis Dam reach. Water sources are available in San Francisquito Creek and at Drinkwater Flat. Coastal rosy boa is expected to be present along Segment G.

Segment 2a: This segment contains abundant chaparral and a perennial stretch of South Portal Creek. This species was identified in summer 2009 on Segment G approximately 2.25 miles from the southern end of this alternative. Coastal rosy boa is expected to be likely to occur along Segment 2a.

Segment H: There are no reported sightings of this species within this segment, but there are abundant chaparral and water sources at Bouquet Creek and Bouquet Reservoir. Habitat is disturbed by Del Sur Road, a quarry mine associated with this road, and Bouquet Canyon Road. Coastal rosy boa is expected to be likely to occur along Segment H.

Segment I: There are no reported sightings of this species within this segment, but there is abundant chaparral along its southern end, with more open areas along its northern end. Water sources are limited. This area is disturbed by Vasquez Canyon Road, Sierra Highway, Elizabeth Lake Road, and various city roads. Coastal rosy boa is expected to be likely to occur along Segment I.

Segment J: There are no reported sightings of this species along this segment, but there are abundant chaparral and water sources. There are intermittent streambeds at Dry Canyon, San Francisquito Canyon, Charlie Canyon, and Bitter Canyon, and standing water at Castaic Lake and Castaic Lagoon. Chaparral is interspersed throughout the segment, with some coastal sage scrub and annual grasslands. Coastal rosy boa is expected to be likely to occur along Segment J.

Coast (San Diego) Horned Lizard

Coast (San Diego) horned lizard (*Phrynosoma coronatum blainvillii*) is a Forest Service Sensitive species and Department of Fish and Game Species of Special Concern.

It inhabits coastal sage scrub and chaparral in arid and semi-arid climate conditions, preferring friable, rocky, or shallow sandy soils. Habitat elevation is typically from sea level to approximately 8000 feet. Eggs are laid between May and June, and hatch between August and September. Diet consists of mainly ants, but other invertebrates such as spiders, beetles, termites, flies, bees, and grasshoppers are also consumed. Hibernation occurs in the fall, with reemergence in the spring.

Based on reported sightings and availability of suitable habitat, this species may occur in almost every segment of the Project. Segments in which coast (San Diego) horned lizard may occur are described below.

Segment A: There are no reported occurrences of this species within this segment, and the creosote bush scrub habitat is not ideal. However, this segment is relatively undisturbed. Coast (San Diego) horned lizard is expected to have a possibility of occurring along Segment A.

Segment B: There are no reported sightings of this species within this segment, and the creosote bush habitat is not ideal. This segment is moderately disturbed by roads and scattered residences, increasingly in its southern end. Coast (San Diego) horned lizard is expected to be unlikely to occur along Segment B.

Segment C: This species was observed in this segment during POWER's 2008 desert habitat assessment surveys. This segment contains patches of chaparral mixed with creosote bush scrub. This segment is disturbed by various roads and residences, along with grazing as a result of those residences. Coast (San Diego) horned lizard is expected to be present along Segment C.

Segment D: There have been several reported sightings of this species within 1.5 miles of Segment D, one of which was within 0.25 mile of the centerline (CDFG 2010). In addition, this species has been observed along Segment D independently by a POWER biologist and a USFS biologist (N. Sill personal communication 2011). This segment contains an abundance of chaparral habitat mixed with patches of coastal sage scrub. It is disturbed by five different transmission lines, at least one gas pipeline, and various Forest Roads, along with the Ridge Route. Coast (San Diego) horned lizard is expected to be present along Segment D.

Segment G: POWER biologists have identified several specimens of this species both in San Francisquito Creek just north of the creek crossing with Forest Road 5N27 and in a residential area east of the southern end of South Portal Canyon. San Francisquito Canyon and the area along City Highline Road and Dry Canyon contain abundant chaparral and sage scrub, along with many areas with sandy soil and riparian vegetation. Coast (San Diego) horned lizard is expected to be present along Segment G.

Segment 2a: There is abundant chaparral in this alternative and its southern end is within one mile of multiple previous sightings by POWER biologists in spring 2009. Coast (San Diego) horned lizard is expected to be present along Segment 2a.

Segment H: There are no reported sightings of this species along this segment, which contains an abundance of chaparral. This segment is disturbed by Del Sur Road, a quarry located next to the road, and Bouquet Canyon Road and its residences and buildings. Coast (San Diego) horned lizard is expected to be likely to occur along Segment H.

Segment I: There are reported occurrences of this species within two miles of this segment, which contains suitable habitat in the form of chaparral and sandy streambeds (CDFG 2010). Coast (San Diego) horned lizard is expected to be likely to occur along Segment I.

Segment J: There is one reported occurrence of this species approximately 0.25 mile from this segment, and another approximately 1.3 miles from the segment (CDFG 2010). Habitat consists of mainly chaparral, with some coastal sage scrub and annual grassland. There are also several sandy streambeds and water sources. Coast (San Diego) horned lizard is expected to be present along Segment J.

Segment K: There is a reported occurrence within the Santa Clara River approximately three miles from this segment. This segment is highly disturbed in its northern portion by the City of Santa Clarita, while its southern portion is relatively undisturbed chaparral and oak habitat on the edge of the San Gabriel

Mountains before descending into the City of San Fernando. Coast (San Diego) horned lizard is expected to have a possibility of occurring along Segment K.

Two-Striped Garter Snake

Two-striped garter snake (*Thamnophis hammondii*) is a Forest Service Sensitive species, Bureau of Land Management Sensitive species, and Department of Fish and Game Species of Special Concern.

It lives in coastal California from the vicinity of Salinas to northwest Baja California, occurring from sea level to approximately 7000 feet in elevation. It is highly aquatic, found in or near permanent fresh water, often along streams with rocky beds and riparian vegetation. Breeding has been observed to occur in late March and early April. Diet consists of tadpoles, newt larvae, small frogs and toads, fish, and sometimes worms and fish eggs.

The two-striped garter snake inhabits perennial and intermittent streams from sea level to over 7,000 feet (Jennings and Hayes 1994). They also occupy stock ponds and other artificially created aquatic habitats (Stephenson and Calcarone 1999). Streams are usually bordered by willows or other types of streamside vegetation (Stebbins 2003). The species inhabits oak woodlands, brushlands, and sparse coniferous forests from Monterey County continuously to Baja California. However, loss of wetland habitat has contributed to a reduction in this species' range (California Herps 2009). Two-striped garter snakes are live-bearing, giving birth to 4 – 36 young in the summer.

Based on reported occurrences and availability of suitable habitat, this species may occur within several segments within this Project area. Segments in which two-striped garter snake may occur are described below.

Segment D: Several individuals were identified approximately three miles from this segment in Fish Canyon by POWER biologists in 2009. This segment contains abundant nearby water sources such as Castaic Lake, but is limited in the amount of perennial streams, if any, which are located under the alignment itself. Open water bodies such as Castaic Lake are mostly separated from the proposed ROW by steep mountain slopes. Habitat is mostly chaparral with patches of coastal sage scrub along the southern half and grassland and desert scrub in the northern half. Two-striped garter snake is expected to be unlikely to occur along Segment D.

Segment G: There are no reported sightings of this species within this segment, but it contains some evidently perennial water sources at the Drinkwater and St. Francis Dam reaches of San Francisquito Creek and at Drinkwater Flat. Habitat is mostly chaparral outside of the streambed. Two-striped garter snake is expected to be likely to occur along Segment G.

Segment 2a: There is a perennial stretch of South Portal Canyon along this alternative, along with abundant chaparral and woodlands. Two-striped garter snake is expected to be likely to occur along Segment 2a.

Segment H: This segment contains perennial water sources in Bouquet Reservoir and Bouquet Creek. Habitat is mostly chaparral interspersed with the occasional patch of riparian vegetation along drainages. Two-striped garter snake is expected to be likely to occur along Segment. H.

Segment I: There are several sightings from one location within one mile of this segment's centerline (CDFG 2010). The most recent sighting was from 1999, although habitat may still be present and sufficient to support this species here, despite being directly adjacent to Elizabeth Lake Road. There is limited water elsewhere along this segment besides the California Aqueduct. Habitat ranges from arid grassland to chaparral. Two-striped garter snake is expected to have a possibility of occurring along Segment I.

Segment J: There are no reported sightings of this species along this segment, which contains mainly chaparral, coastal sage scrub, and annual grassland, along with several intermittent streambeds and two large sources of standing water at Castaic Lake and Castaic Lagoon. Several individuals were identified approximately three miles upstream of the end of this segment in Fish Canyon. Two-striped garter snake is expected to have a possibility of occurring along Segment J.

Riverside Fairy Shrimp

Riverside fairy shrimp (*Streptocephalus woottoni*) is a federally endangered species.

Its range includes Ventura, Los Angeles, Riverside, Orange, and San Diego Counties, and Baja California. It is found in vernal pools, deep, cool water pools, and occasionally in depressions that support suitable habitat. It is usually visible in shallow pools between January and March. Hatching and maturation occurs within one to two weeks, though eggs can lie dormant for long periods in dry soils until a proper pooled area is present for them to hatch in.

There is no suitable habitat for this species within the Project area except near Segment I. There are several vernal pools located within one mile of the southern portion of this segment. However, there is currently no evidence that this species is present on Cruzan Mesa, and it is expected to be absent from the Project area.

Species	Scientific Name	Regulatory Status			Habitat Requirements	Segment Occurrence Code (A, U, Po, L, Pr)												
		Federal	State	Other		A	B	C	D	E	F	G	2a	H	I	J	K	115
Two-Striped Garter Snake	*Thamnophis hammondii*	FSS, BLM S		DFG SC	Coastal California from vicinity of Salinas to Northwest Baja California. From sea level to approximately 7,000 feet elevation. Highly aquatic, found in or near permanent fresh water, often along streams with rocky beds and riparian vegetation.	A	A	A	U	A	A	L	L	L	Po	Po	A	A
Riverside Fairy Shrimp	*Streptocephalus woottoni*	FE			Vernal pools; deep, cool water pools and occasionally in depressions (e.g., ruts and ditches) that support suitable habitat.	A	A	A	A	A	A	A	A	A	A	A	A	A

Listing Status:
U.S. Fish and Wildlife Service (USFWS)
FE = listed as Endangered under the federal Endangered Species Act
FT = listed as Threatened under the federal Endangered Species Act
FS= listed as Sensitive under the federal Endangered Species Act
FPE= proposed listing under the federal Endangered Species Act
BCC = Bird of Conservation Concern
Delisted = Formerly listed as threatened or endangered under the federal Endangered Species Act
U.S. Forest Service (FS)
FSS = listed as Forest Service Sensitive
MIS = listed as Forest Service Management Indicator Species
Bureau of Land Management (BLM)
S = listed as BLM Sensitive
California Department of Fish and Game (CDFG)
SE = listed as Endangered under the California Endangered Species Act
ST = listed as Threatened under the California Endangered Species Act
SR=listed as Rare under the California Endangered Species Act
SC= listed as Species of Concern
FP = listed as Fully Protected under CDFG Code
Western Bat Working Group (WBWG)
H = listed as High Priority
Other
CA Fur-bearing Mammal = Listed under California Fur-bearing Mammal Statute § 4000 – 4012

Occurrence Code:
A = Absent: Species or sign not observed on the site, outside of the known range, and conditions unsuitable for occurrence
U = Unlikely: Species or sign not observed on the site, but conditions marginal for occurrence
Po = Possible: Species or sign not observed on the site, but conditions suitable for occurrence and/or an historical record exists in the vicinity
L = Likely: Species or sign not observed on the site, but reasonably certain to occur on the site based on conditions, species ranges, and recent records
Pr = Present: Species or sign of their presence recently observed on the site

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TABLE 9. SENSITIVE WILDLIFE SPECIES WITH POTENTIAL TO OCCUR IN THE PROJECT AREA

Species	Scientific Name	Regulatory Status			Habitat Requirements	Segment Occurrence Code (A, U, Po, L, Pr)												
		Federal	State	Other		A	B	C	D	E	F	G	2a	H	I	J	K	115
San Gabriel Mountain Slender Salamander	*Batrachoseps gabrieli*	FSS			Known only from the San Gabriel Mountains. Found under rocks, wood, fern fronds, and on soil at the base of talus slopes. Most active on the surface in winter and early spring.	A	A	A	A	A	A	A	A	A	A	A	U	A
Arroyo Toad	*Bufo californicus*	FE, FS MIS		DFG SC	Semi-arid regions near washes or intermittent streams, including valley-foothill and desert riparian desert wash. Rivers with sandy banks, willows, cottonwoods, and sycamores; loose, gravelly areas of streams in drier parts of range.	A	A	A	U	A	A	U	U	U	A	Pr	A	A
Yellow-Blotched Salamander	*Ensatina eschscholtzii croceater*	FSS, BLM S		DFG SC	Forests and well-shaded canyons, as well as oak woodlands and old chaparral. Needs surface objects, such as logs, boards, and rocks. Also needs old rodent burrows or other underground retreats.	A	A	A	A	A	A	A	A	A	A	A	A	A
California Red-Legged Frog	*Rana aurora draytonii*	FT		DFG SC	Lowland and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. This includes permanent and semipermanent aquatic habitats (such as creeks and cold water ponds) with emergent and submergent vegetation and riparian species along the edges; may estivate in rodent burrows or cracks during dry periods.	A	A	A	A	A	A	Po	A	U	A	U	A	A
Foothill Yellow-Legged Frog	*Rana boylii*	FSS, BLM S		DFG SC	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg-laying.	A	A	A	A	A	A	A	A	A	A	A	A	A
Mt. Yellow-Legged Frog	*Rana muscosa*	FE, FSS		DFG SC	Streams containing perennial water, deep pools, and open, sunny banks lacking heavy vegetative cover.	A	A	A	A	A	A	A	A	A	A	A	A	A
Western Spadefoot Toad	*Spea hammondii*	BLM S		DFG SC	Primarily found in grasslands, but can also persist in valley-foothill woodlands, washes, floodplains, alluvial fans, playas, and alkali flats; reproduces in slow-flowing streams and temporary pools.	A	A	A	Pr	A	A	L	L	L	L	Pr	Pr	A
Northern Goshawk	*Accipiter gentilis*	FSS, BLM S		DFG SC	In or near coniferous forests. Nests constructed on north slopes near water in red firs, lodgepole pines, Jeffrey pines, and aspens.	A	A	A	A	A	A	A	A	A	A	A	A	A
Golden Eagle	*Aquila chrysaetos*			DFG FP, DFG WL, USFWS BCC	Nests in cliffs or large trees, typically in mountainous regions and in the vicinity of open grassland or oak savanna habitat. Forages in areas of open habitat.	Po	Pr	Pr	Pr	Po	U	U	A	U	U	A	A	U
Burrowing Owl	*Athene cunicularia*	BLM S		DFG SC, USFWS BCC	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas. Uses rodent burrows in sparse grassland, desert, and agricultural habitats.	Po	L	L	L	Po	Pr	U	A	U	Po	A	A	L
Swainson's Hawk	*Buteo swainsonii*	FSS	ST	USFWS BCC	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, agricultural areas, and ranches. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	A	Po	A	Po	Po	Po	Po	A	Po	Po	A	A	Po
Western Yellow-Billed Cuckoo	*Coccyzus americanus occidentalis*	FC, FSS	SE	USFWS BCC	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Nests in willow/cottonwood forest, with understory of blackberry, nettles, or wild grape.	A	A	A	A	A	A	Po	Po	Po	A	A	A	A
Southwestern Willow Flycatcher	*Empidonax traillii extrimus*	FE	SE		Riparian woodlands in southern California.	A	A	A	A	A	A	Po	Po	Po	A	A	A	A
Peregrine falcon	*Falco peregrinus*	Delisted, FSS	SE	DFG FP, USFWS BCC	Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds, and man-made structures. Nest consists of a scrape on a depression or a ledge in an open site.	A	A	A	Po	A	A	Po	U	Po	U	Po	A	A
California Condor	*Gymnogyps californianus*	FE	SE		Requires vast expanses of open savannah, grass savannah, grasslands, and foothill chaparral in mountain ranges of moderate altitude. Microhabitat consists of deep canyons with rocky walls for nesting sites. Forages up to 150 miles from roost/nest.	A	A	A	Pr	A	A	Po	Po	Po	Po	Pr	Pr	A
Bald Eagle	*Haliaeetus leucocephalus*	Delisted, FSS	SE	DFG FP	Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests are within one mile of water. Nests in large, old-growth or dominant live trees with open branches, especially Ponderosa pine. Roosts communally in winter.	A	A	A	Po	A	A	A	A	L	A	Po	A	A
Loggerhead Shrike	*Lanius ludovicianus*			DFG SC, USFWS BCC	Open space with patchy shrubs and trees, including desert scrub, agricultural areas, pastoral habitat, and suburban areas.	Pr	L	Pr	Pr	Po	Po	Po	A	U	Po	Po	A	U
Coastal California Gnatcatcher	*Polioptila californica californica*	FT, FSS		DFG SC	Obligate, permanent resident of coastal sage scrub below 2500 feet in southern California. Low, coastal sage scrub in arid washes, on mesas and slopes. Not all areas classified as coastal sage scrub are occupied.	A	A	A	Pr	A	A	A	A	A	A	Pr	Pr	A
California Spotted Owl	*Strix occidentalis occidentalis*	FSS, FS MIS, BLM S		DFG SC, USFWS BCC	Mixed conifer forest, often with an understory of black oaks and other deciduous hardwoods. Canopy closure >40%. Most often found in deep-shaded canyons, on north-facing slopes, and within 300 meters of water.	A	A	A	U	A	A	Po	Po	U	A	Po	A	A
Least Bell's Vireo	*Vireo bellii pusillus*	FE	SE	USFWS BCC	Summer resident of southern California in low riparian in vicinity of water or in dry river bottoms, below 2000 feet. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, baccharis, mesquite.	A	A	A	Pr	A	A	Po	Po	Po	A	Pr	A	A
Pallid Bat	*Antrozous pallidus*	FSS, BLM S		DFG SC, WBWG H	Deserts, grasslands, shrublands, woodlands and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. This species is very sensitive to disturbance of roosting sites.	Po	L	U	L	L	U	L	U	Po	L	Po	Po	U
Townsend's Big-Eared Bat	*Corynorhinus tonwsendii*	FSS, BLM S		DFG SC, WBWG H	Occurs throughout California in a variety of habitats, but most common in mesic sites. Roosts in the open, hanging from horizontal and vertical surfaces. Very sensitive to human disturbance.	A	Po	A	L	A	A	L	L	Po	L	Po	Po	A
Western Mastiff Bat	*Eumops perotis californicus*	BLM S		DFG SC WBWG H	In California this species is most frequently encountered in broad open areas. Generally, this bat is found in a variety of habitats, from dry desert washes, flood plains, chaparral, oak woodland, open ponderosa pine forest, grassland, montane meadows, and agricultural areas.	L	L	Po	L	L	L	L	U	Po	L	Po	L	U

Species	Scientific Name	Regulatory Status			Habitat Requirements	Segment Occurrence Code (A, U, Po, L, Pr)												
		Federal	State	Other		A	B	C	D	E	F	G	2a	H	I	J	K	115
Western Red Bat	*Lasiurus blossivillii*	FSS		DFG SC, WBWG H	Roosts primarily in trees, two to 40 feet off the ground. Occurs from sea level up through mixed conifer forests. Prefers habitat edges and mosaics with trees that are protected from above and open below, with open areas for foraging.	A	A	A	L	A	A	L	L	L	L	L	L	A
Western Yellow Bat	*Lasiurus xanthinus*			DFG SC WBWG H	Western yellow bats are thought to be noncolonial. Individuals usually roost in trees, hanging from the underside of a leaf. They are commonly found in the southwestern U.S. roosting in the skirt of dead fronds in both native and non-native palm trees.	A	A	A	A	A	A	A	A	A	A	A	A	A
San Diego Black-tailed Jackrabbit	*Lepus californicus bennettii*			DFG SC	Coastal southern California, mainly in open herbaceous/tree edges and open coastal sage scrub, chaparral, and forest habitats.	A	A	A	Pr	A	A	Po	Pr	Po	A	Pr	A	A
Southern Grasshopper Mouse	*Onychomys torridus ramona*			DFG SC	Resides in arid desert habitats in the Mojave Desert and the California Central Valley. Preferred habitat consists of alkali and desert scrub with low to moderate cover, although it can also occur less frequently in succulent shrub, washes, riparian areas, coastal scrub, mixed chaparral, and bitterbrush habitats.	Po	Po	Po	Po	A	A	U	A	U	Po	A	A	A
San Gabriel Mountains Bighorn Sheep	*Ovis canadensis nelsoni*	FSS, BLM S			Widely distributed from the White Mountains in Mono County to the Chocolate Mountains in Imperial County. Open, rocky, steep areas with available water and herbaceous forage.	A	A	A	A	A	A	A	A	A	A	A	A	A
White-Eared Pocket Mouse	*Perognathus alticolus alticolus*	FSS, BLM S		DFG SC	Ponderosa and Jeffrey pine habitats, also in mixed chaparral and sagebrush habitats in the San Bernardino Mountains. Burrows are constructed in loose soil.	A	A	A	A	A	A	A	A	A	A	A	A	A
Tehachapi Pocket Mouse	*Perognathus alticolus inexpectatus*	FSS		DFG SC	Arid annual grassland and desert shrub communities, but also found in fallow grain fields and in Russian thistle. Burrows for cover and nesting. Aestivates and hibernates during extreme weather. Forages on open ground and under shrubs.	U	U	Po	U	U	A	Po	Po	A	A	A	A	A
Los Angeles Pocket Mouse	*Perognathus longimembris brevinasus*	FSS		DFG SC	Lower-elevation grasslands and coastal sage communities in and around the Los Angeles basin. Open ground with fine sandy soils; may not dig extensive burrows, hiding under weeds and dead leaves instead.	A	A	A	A	A	A	A	A	A	A	A	A	A
Mohave Ground Squirrel	*Spermophilus mohavensis*	None	ST		Open desert scrub, alkali scrub and Joshua tree woodland. Also feeds in annual grasslands, restricted to Mojave desert. Prefers sandy to gravelly soils, avoids rocky areas, uses burrows at base of shrubs for cover. Nests are in burrows.	Po	L	Po	A	A	A	A	A	A	A	A	A	A
American Badger	*Taxidea taxus*			DFG SC, CA Fur-bearing Mammal	Open stages of shrub, forest, and herbaceous habitats, including grasslands. Requires friable soil for burrowing.	L	Pr	Po	L	Po	Po	Po	A	Po	Po	U	U	Po
Desert Kit Fox	*Vulpes macrotis arsipus*			CA Fur-bearing Mammal	Multiple habitats including desert scrub, saltbush, chaparral, and grassland.	L	L	L	L	L	Po	Po	A	Po	Po	A	A	Po
Santa Ana Sucker	*Catostomus santaanae*	FT, FSS		DFG SC	Habitat generalists, but prefer sand-rubble-boulder bottoms, cool clear water, and algae.	A	A	A	U	A	A	U	U	A	U	U	U	A
Unarmored Threespine Stickleback	*Gasterosteus aculeatus williamsoni*	FE, FSS	SE	DFG FP	Weedy pools, backwaters, and among emergent vegetation at the stream edge in small southern California streams; cool (< 27° C) water with abundant vegetation.	A	A	A	A	A	A	A	A	Pr	Pr	A	L	A
Arroyo Chub	*Gila orcutti*	FSS		DFG SC	Los Angeles basin south coastal streams; slow water stream sections with mud or sand bottoms, feeds heavily on aquatic vegetation and associated invertebrates.	A	A	A	U	A	A	Po	A	A	U	Po	A	A
Santa Ana Speckled Dace	*Rhinichthys osculus*	FSS		DFG SC	Headwaters of the Santa Ana and the San Gabriel Rivers, may be extirpated from the Los Angeles River system. Requires permanent flowing streams with summer water temperatures of 17° - 20° C. Usually inhabits shallow cobble and gravel riffles.	A	A	A	A	A	A	A	A	A	A	A	A	A
California Legless Lizard	*Anniella pulchra*	FSS		DFG SC	Sandy or loose loamy soils under sparse vegetation. Soil moisture essential; this species prefers soils with high moisture content.	A	A	A	U	A	A	U	A	U	Po	Po	A	A
Southern Rubber Boa	*Charina bottae umbratica*	FSS	ST		Restricted to the San Bernardino and San Jacinto Mountains; found in a variety of montane forest habitats. Found in vicinity of streams or wet meadows, requires loose, moist soil for burrowing. Seeks cover in rotten logs.	A	A	A	A	A	A	A	A	A	A	A	A	A
Southwestern Pond Turtle	*Actinemys marmorata pallida*	FSS		DFG SC	Requires some slow-water habitat; also, shallow water with emergent vegetation. Nesting requires soils with a high clay or silt fraction to retain moisture. In California, this species is known from only two drainages on the desert slope in California: the Mojave River (San Bernardino County) and Andreas Canyon (Riverside County). From sea level to 1430 meters.	A	A	A	U	A	A	Pr	A	A	Po	U	A	A
San Bernardino Ringneck Snake	*Diadophis punctatus modestus*	FSS			Most common in open, rocky areas, often in somewhat moist microhabitats near intermittent streams. Avoids moving through open or barren areas by restricting movements to areas of surface litter or herbaceous vegetation.	A	A	A	A	A	A	Po	A	A	A	A	A	A
Desert Tortoise	*Gopherus agassizii*	FT	ST		Most common in desert scrub, desert wash and Joshua tree habitats; occurs in almost every desert habitat. Requires friable soil for burrow and nest construction creosote bush habitat with annual wildflower blooms.	Pr	Po	Po	Po	U	A	A	A	A	A	A	A	A
San Bernardino Mountain Kingsnake	*Lampropeltis zonata parvirubra*	FSS		DFG SC	Big cone spruce and chaparral at lower elevations; black oak, incense cedar, Jeffrey pine, and Ponderosa pine at higher elevations. Well-lit canyons with rocky outcrops or rocky talus.	A	A	A	A	A	A	A	A	A	A	A	A	A
Coastal Rosy Boa	*Lichanura trivirgata roseofusca*	FSS, BLM S			Desert and chaparral from the coast to the Mojave and Colorado Deserts. Prefers moderate to dense vegetation and rocky cover. Habitats with a mix of brushy cover and rocky soil such as coastal canyons and hillsides, desert canyons, washes and mountains.	U	Po	L	L	A	A	Pr	L	L	L	L	A	A
Coast (San Diego) Horned Lizard	*Phrynosoma coronatum blainvillii*	FSS		DFG SC	Inhabits coastal sage scrub and chaparral in arid and semi-arid climate conditions. Prefers friable, rocky, or shallow sandy soils.	Po	U	Pr	Pr	A	A	Pr	Pr	L	L	Pr	Po	A

Scientific Name Common Name[1]	Habitat Requirements[2]	Flowering period[2]	Conservation Status[3]	Potential for Occurrence within the Project Area[4]
Symphyotrichum greatae Greata's aster	Broadleaved upland forest, chaparral, cismontane woodland, lower montane coniferous forest, and riparian woodland. 984 – 6,594 feet	June – October	Fed: None CA: None CNPS: 1B.3	**Segment A: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Likely.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment G: Likely.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Likely.** Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment I: Likely.** Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment J: Likely.** Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment K: Likely.** Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment 2a: Likely.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Syntrichopappus lemmonii Lemmon's syntrichopappus	Chaparral, Joshua tree woodland, pinyon and juniper woodland; sandy or gravelly habitats. 1,665 - 6,095 feet	April – May	Fed: None CA: None CNPS: 4.3 USFS: Watch List	**Segment A: Possible.** Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Possible.** Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment C: Possible.** Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in Joshua Tree Woodland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Possible.** Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Possible.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Possible.** Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Possible.** Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Thelypteris puberula Sonoran maiden fern	Meadows and seeps. 197 – 2,001 feet	January – September	Fed: None CA: None CNPS: 2.2 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
Viola aurea golden violet	Great Basin scrub and pinyon and juniper woodland habitats in sandy soils. 3,280-5,900 feet	April-May	Fed: None CA: None CNPS: 2.2	**Segment A: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Likely.** Suitable habitat exists in Rabbitbrush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Likely.** Suitable habitat exists in Rabbitbrush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.

Notes:
1. Sources of scientific names and common names are: Hickman (1993), CNPS (2008) and CalFlora (2008).
2. Sources of habitat characteristics and flowering times are: CNDDB (CDFG 2008a), and CNPS (2008).
3. Conservation status designations:

Federal status
FE = listed as Endangered under the federal Endangered Species Act
FT = listed as Threatened under the federal Endangered Species Act
FC = candidate for listing

State status
SE = listed as Endangered under the California Endangered Species Act
ST = listed as Threatened under the California Endangered Species Act
SR = listed as Rare under the California Native Plant Protection Act

CNPS designations
List 1B Plants rare, threatened, or endangered in California and elsewhere
List 2 Plants rare, threatened, or endangered in California, but more common elsewhere
List 3 Plants for which more information is needed; a review list
List 4 Plants of limited distribution; a watch list

CNPS threat extension codes
.1 Seriously endangered in California
.2 Fairly endangered in California
.3 Not very endangered in California
? Threat status undetermined

US Forest Service Sensitive Plants
USFS Sensitive
USFS Watch List

Bureau of Land Management
Sensitive species are those species that are designated by the State Director for special management consideration.

4. Potential to occur within the Project area is based on an analysis of species range and habitat preferences*, using the following criteria:

Is the species known to the segment?
YES–PRESENT

Are the habitat requirements of the species associated with any of the mapped vegetation types for each segment?
Is the elevation range of the species within 500 feet of the elevation range of the segment?
Is the species known within 10 miles of segment?
YES to all three questions—LIKELY
YES to habitat question and one other question—POSSIBLE
YES to habitat question only—UNLIKELY
NO to habitat question—ABSENT

*Note that the "Habitat Requirements" header is based on Holland vegetation types and the "Potential for Occurrence within the Project Area" header was assessed using partially field-verified California GAP vegetation types. The *Index to NDDB/Holland Types* was used to translate between the Holland, NDDB, and GAP classification systems from the perspective to designate habitat as suitable when in doubt (Sawyer et al. 2009; http://davisherb.ucdavis.edu/cnpsActiveServer/indices.html).

Example: The "Habitat Requirements" for *Androsace elongata* ssp. *acuta* include chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, and valley and foothill grassland. Each Holland type was looked up using the *Index to NDDB/Holland Types*. Chaparral corresponded to the chamise, scrub oak – birchleaf mountain-mahogany, and Interior live oak NDDB types, which correspond to the Chamise Chaparral, Scrub Oak Chaparral, and Interior Live Oak Chaparral GAP types (Southern Mixed Chaparral was also added to this because it fit best and wasn't defined). The cismontane woodland Holland type also corresponded to Interior Live Oak NDDB type, which corresponded to the Interior Live Oak Chaparral GAP type. The coastal scrub Holland type corresponded to the brittlebush, California buckwheat, and California sagebrush NDDB types, which correspond to the Mojave Creosote Bush Scrub and Riversidian Sage Scrub GAP types. The valley and foothill grassland Holland type corresponded to the California annual grassland NDDB type, which corresponds to the California Annual Grassland GAP type. No NDDB types corresponded to the pinyon and juniper Holland type that also corresponded to any GAP types present in the project area.

Occurrence Code:

Present: Species or sign of their presence recently observed on the site

High: Species or sign not observed on the site, but reasonably certain to occur on the site based on conditions, species ranges, and recent records

Moderate: Species or sign not observed on the site, but conditions suitable for occurrence and/or an historical record exists in the vicinity

Low: Species or sign not observed on the site, but conditions marginal for occurrence
Not Expected: Species or sign not observed on the site, outside of the known range, and conditions unsuitable for occurrence

Scientific Name Common Name[1]	Habitat Requirements[2]	Flowering period[2]	Conservation Status[3]	Potential for Occurrence within the Project Area[4]
Romneya coulteri Coulter's matilija poppy	Chaparral and coastal scrub, often in burns. 65 – 3937 feet	March – July	Fed: None CA: None CNPS: 4.2	**Segment A: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment C: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Likely.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Possible.** Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Possible.** Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Possible.** Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Likely.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Scutellaria bolanderi ssp. *austromontana* southern mountains skullcap	Chaparral, cismontane woodland, lower montane coniferous forest; mesic soils. 2,000 - 6,660 feet	June –August	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment D: Unlikely.** Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Unlikely.** Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment H: Unlikely.** Marginal habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Unlikely.** Marginal habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Unlikely.** Marginal habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Unlikely.** Marginal habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Unlikely.** Marginal habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Senecio aphanactis chaparral ragwort	Chaparral, cismontane woodland, coastal scrub, and riparian woodland. 0 – 6,890 feet	January to April	Fed: None CA: None CNPS: 2.2 USFS: None BLM: None	**Segment A: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Likely.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment E: Likely.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Possible.** Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment I: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment J: Likely.** Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment K: Likely.** Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment 115: Possible.** Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Sidalcea hickmanii ssp. *parishii* Parish's checkerbloom	Chaparral, montane coniferous forest; disturbed sites after fire, and grazed land. 4,000 - 7,500 feet.	June – August	Fed: None CA: SR CNPS: 1B.2 USFS Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Unlikely.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment G: Possible.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Unlikely.** Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment K: Unlikely.** Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Sidotheca (=Oxytheca) caryophylloides chickweed oxytheca	Lower montane coniferous forest; sandy habitat. 3,710 - 8,660 feet	July – September	Fed: None CA: None CNPS: 4.3 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.

Scientific Name Common Name[1]	Habitat Requirements[2]	Flowering period[2]	Conservation Status[3]	Potential for Occurrence within the Project Area[4]
Streptanthus bernardinus Laguna Mountains jewel flower	Chaparral, lower montane coniferous forest. 2,230 - 8,325 feet	May – August	Fed: None CA: None CNPS: 4.3 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment D: Unlikely.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Possible.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Unlikely.** Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Unlikely.** Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Streptanthus campestris southern jewel flower	Chaparral, lower montane coniferous forest, pinyon and juniper woodland; rocky habitat. 3,000 - 7,660 feet	May – July	Fed: None CA: None CNPS: 1B.3 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Possible.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Unlikely.** Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment K: Unlikely.** Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Streptanthus cordatus var. *piutensis* Piute Mountains jewel-flower	Chaparral, cismontane woodland, and coastal scrub. 49 – 2,625 feet	January – April	Fed: None CA: None CNPS: 2.2 BLM: SS	**Segment A: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment B: Likely.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment E: Likely.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment F: Possible.** Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Possible.** Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Likely.** Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment 115: Possible.** Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Stylocline masonii Mason's neststraw	Chenopod scrub and pinyon and juniper woodland. 328 – 3,937 feet	March – May	Fed: None CA: None CNPS: 1B.1 USFS: None BLM: None	**Segment A: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.
Symphyotrichum (=Aster) defoliatum San Bernardino aster	Cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, marshes and swamps, valley and foothill grasslands. Found near ditches, streams, or springs. 7 - 6,795 feet	July – November	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	**Segment A: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Likely.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Likely.** Suitable habitat exists in California Annual Grassland, Mojave Creosote Bush Scrub, and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment E: Likely.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Possible.** Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Likely.** Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Possible.** Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Possible.** Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Possible.** Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Scientific Name Common Name[1]	Habitat Requirements[2]	Flowering period[2]	Conservation Status[3]	Potential for Occurrence within the Project Area[4]
Orcuttia californica California Orcutt grass	Vernal pools. 49 – 2,165 feet	April – August	Fed: FE CA: SE CNPS: 1B.1	**Segment A: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. **Segment D: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment.
Oreonana vestita woolly mountain-parsley	Lower montane coniferous forest, subalpine coniferous forest, upper montane coniferous forest; gravel or talus. 5,380 - 11,655 feet	May – September	Fed: None CA: None CNPS: 1B.3 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
Orobanche valida ssp. *valida* Rock Creek broomrape	Chaparral, pinyon and juniper woodland; granitic soil. 4,100 - 6,560 feet	May – July	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Unlikely.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment G: Possible.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Unlikely.** Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment K: Unlikely.** Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Orthotrichum spjutii Spjut's bristle moss	Broadleaved upland forest. 6,890 – 7,874 feet		Fed: None CA: None CNPS: 1B.3	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; species is known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. **Segment D: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is not appropriate; species is known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
Parnassia cirrata var. *cirrata* fringed grass-of-parnassus	Lower montane coniferous forest, meadows and seeps, upper montane coniferous forest; mesic soils, streamsides, or calcareous habitat. 4,165 - 8,125 feet	August – September	Fed: None CA: None CNPS: 1B.3 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.

Scientific Name Common Name[1]	Habitat Requirements[2]	Flowering period[2]	Conservation Status[3]	Potential for Occurrence within the Project Area[4]
Perideridia gairdneri ssp. *gairdneri* Gairdner's yampah	Broadleaved upland forest, chaparral, coastal prairie, valley and foothill grassland, vernal pools or vernally mesic soils. 0 - 1,215 feet	June – October	Fed: None CA: None CNPS: 4.2 USFS: Watch List	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Unlikely.** Suitable habitat exists in California Annual Grassland; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Unlikely.** Suitable habitat exists in California Annual Grassland; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment F: Unlikely.** Suitable habitat exists (F2 part) in California Annual Grassland; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment G: Unlikely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Possible.** Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Possible.** Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Unlikely.** Suitable habitat exists in California Annual Grassland; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment 2a: Unlikely.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Phacelia exilis Transverse Range phacelia	Lower montane coniferous forest, meadows and seeps, upper montane coniferous forest; sandy or gravelly sites. 3,665 - 8,990 feet	May – August	Fed: None CA: None CNPS: 4.3 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.
Phacelia nashiana Charlotte's phacelia	Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland. 1,969 – 7,218 feet.	March – June	Fed: None CA: None CNPS: 1B.2 BLM: SS	**Segment A: Likely.** Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment B: Likely.** Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Likely.** Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Likely.** Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.
Potentilla glandulosa ssp. *ewanii* Ewan's cinquefoil	Lower montane coniferous forest near seeps and springs. 6,330 - 7,990 feet	June – July	Fed: None CA: None CNPS: 1B.3 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
Pseudognaphalium leucocephalum (SYN=Gnaphalium leucocephalum) white rabbit-tobacco	Chaparral, cismontane woodland, coastal scrub, and riparian woodland. 0 – 6,890 feet	August – November	Fed: None CA: None CNPS: 2.2	**Segment A: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Likely.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Likely.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Possible.** Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Possible.** Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Likely.** Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment 115: Possible.** Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Scientific Name Common Name[1]	Habitat Requirements[2]	Flowering period[2]	Conservation Status[3]	Potential for Occurrence within the Project Area[4]
Lupinus peirsonii Peirson's lupine	Joshua tree woodland, lower montane coniferous forest, pinyon and juniper woodland, upper montane coniferous forest; gravelly or rocky sites. 3,330 - 8,325 feet	April – June	Fed: None CA: None CNPS: 1B.3 USFS: Sensitive	**Segment A: Possible.** Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Possible.** Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment C: Possible.** Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Possible.** Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.
Malacothamnus davidsonii Davidson's bush-mallow	Chaparral, cismontane woodland, coastal scrub, and riparian woodland. 607 – 2,805 feet	June - January	Fed: None CA: None CNPS: 1B.2	**Segment A: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Likely.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment E: Likely.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Possible.** Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment J: Likely.** Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment K: Likely.** Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment 115: Possible.** Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Mentzelia tridentata creamy blazing star	Rocky or sandy soils within Mojavean desert scrub. 2,250 – 3,850 feet	March - May	Fed: None CA: None CNPS: 1B.3	**Segment A: Likely.** Suitable habitat exists in Joshua Tree woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment B: Likely.** Suitable habitat exists in Joshua Tree woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Likely.** Suitable habitat exists in Joshua Tree woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in Joshua Tree woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Likely.** Suitable habitat exists in Joshua Tree woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.
Mimulus pictus calico monkeyflower	Cismontane woodland and broad-leafed upland forest. 328 – 4,265 feet	March – May	Fed: None CA: None CNPS: 1B.2 USFS: None BLM: None	**Segment A: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Monardella macrantha ssp. *hallii* Hall's monardella	Broadleaved upland forest, chaparral, lower montane coniferous forest, cismontane woodland, valley and foothill grassland; openings, dry slopes and ridges. 2,395 - 7,200 feet	June –August	Fed: None CA: None CNPS: 1B.3 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Possible.** Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Possible.** Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment F: Possible.** Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Possible.** Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Possible.** Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Possible.** Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Scientific Name Common Name[1]	Habitat Requirements[2]	Flowering period[2]	Conservation Status[3]	Potential for Occurrence within the Project Area[4]
Monardella viridis var. *saxicola* rock monardella	Broadleaved upland forest, chaparral, cismontane woodland. 985 - 3,315 feet	July – September	Fed: None CA: None CNPS: 4.2 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment D: Unlikely.** Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Unlikely.** Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment H: Unlikely.** Marginal habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Unlikely.** Marginal habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Unlikely.** Marginal habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Unlikely.** Marginal habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Unlikely.** Marginal habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Navarretia fossalis spreading navarretia	Chenopod scrub, marshes and swamps, playas, and vernal pools. 98 – 4,265 feet	April – June	Fed: None CA: None CNPS: 1B.1	**Segment A: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment.
Navarretia ojaiensis Ojai navarretia	Chaparral, coastal scrub, and valley and foothill grassland. 902 – 2,034 feet	May - July	Fed: None CA: None CNPS: 1B1	**Segment A: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Likely.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is not appropriate; and species is known within 10 miles of segment. **Segment D: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment E: Possible.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is known within 10 miles of segment. **Segment F: Possible.** Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Likely.** Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment K: Possible.** Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Possible.** Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Unlikely.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Navarretia peninsularis Baja navarretia	Chaparral (openings) and lower montane coniferous forest; mesic soils. 4,920 - 7,550 feet	June – August	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Unlikely.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment E: Unlikely.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment F: Unlikely.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment G: Unlikely.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment H: Unlikely.** Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Unlikely.** Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment K: Unlikely.** Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment 2a: Unlikely.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Opuntia basilaris var. *brachyclada* short-joint beavertail	Chaparral, Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland; often on sandy soils or coarse, granitic loam. 1,395 - 5,910 feet	April – June	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive BLM: SS	**Segment A: Possible.** Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Likely.** Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Likely.** Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Present.** Species known within segment corridor. Suitable habitat exists in Joshua Tree Woodland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment E: Likely.** Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment G: Present.** Species known within segment corridor. Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Likely.** Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral elevation is appropriate; and species is known within 10 miles of segment. **Segment I: Present.** Species known within segment corridor. Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment J: Likely.** Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment K: Likely.** Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment 2a: Likely.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Scientific Name Common Name¹	Habitat Requirements²	Flowering period²	Conservation Status³	Potential for Occurrence within the Project Area⁴
Imperata brevifolia California satintail	Chaparral, coastal scrub, Mojavean desert scrub, meadows and seeps (often alkali), riparian scrub in mesic soil. 0 - 1,640 feet	September – May	Fed: None CA: None CNPS: 2.1 USFS: Sensitive	**Segment A: Unlikely.** Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Unlikely.** Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment C: Unlikely.** Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in Chamise Chaparral, Joshua Tree Woodland Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Unlikely.** Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment G: Possible.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Possible.** Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Possible.** Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Unlikely.** Suitable habitat exists in Riversidian Sage Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment 2a: Unlikely.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Juglans californica Southern California black walnut	Chaparral, cismontane woodland, and alluvial coastal scrub. 60 - 2,950 feet	March – August	Fed: None CA: None CNPS: 4.2 USFS Watch List	**Segment A: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment C: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Possible.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Possible.** Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Possible.** Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Possible.** Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Layia heterotricha pale-yellow layia	Cismontane woodland, coastal scrub, pinyon and juniper woodland, and valley and foothill grassland. 984 – 5,594 feet	March – June	Fed: None CA: None CNPS: 1B.1	**Segment A: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment B: Likely.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in California Annual Grassland, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Likely.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Likely.** Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment. **Segment G: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Likely.** Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment I: Likely.** Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment J: Possible.** Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Possible.** Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Possible.** Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.
Lepechinia fragrans fragrant pitcher sage	Chaparral. 70 - 4,360 feet	March – October	Fed: None CA: None CNPS: 4.2 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment D: Unlikely.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment G: Unlikely.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Unlikely.** Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Unlikely.** Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Lepechinia rossii Ross' pitcher sage	Chaparral. 1,000 - 2,610 feet	May - September	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Likely.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment G: Likely.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Likely.** Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment I: Likely.** Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment J: Likely.** Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment K: Likely.** Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment 2a: Likely.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Scientific Name Common Name¹	Habitat Requirements²	Flowering period²	Conservation Status³	Potential for Occurrence within the Project Area⁴
Leptosiphon serrulatus Madera leptosiphon	Cismontane woodland and lower montane coniferous forest. 984 – 4,265 feet	April – May	Fed: None CA: None CNPS: 1B.2	**Segment A: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Lilium humboldtii ssp. *ocellatum* ocellated lily	Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, openings in riparian woodland. 100 - 3,995 feet	March – July (August is unusual)	Fed: None CA: None CNPS: 4.2 USFS: Watch List	**Segment A: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment C: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Possible.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Possible.** Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Possible.** Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Possible.** Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Lilium parryi lemon lily	Upper and lower montane coniferous forest, meadows and seeps, riparian forest; mesic or boggy areas. 4,270 - 8,600 feet	July – August	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.
Linanthus concinnus San Gabriel linanthus	Lower and upper montane coniferous forest; rocky soils, dry slopes. 5,170 - 9,190 feet	April – July	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
Loeflingia squarrosa var. *artemisiarum* sagebrush loeflingia	Desert dunes, Great Basin scrub, and Sonoran desert scrub. 2,297 – 5,299 feet	April-May	Fed: None CA: None CNPS: 2.2	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. **Segment C: Possible.** Suitable habitat exists in Rabbitbrush Scrub; elevation is not appropriate; and species is known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in Rabbitbrush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.

Scientific Name Common Name[1]	Habitat Requirements[2]	Flowering period[2]	Conservation Status[3]	Potential for Occurrence within the Project Area[4]
Eriophyllum mohavense Barstow woolly sunflower	Chenopod scrub, Mojavean desert scrub, and playas. 1,640 – 3,150 feet	April – May	Fed: None CA: None CNPS: 1B.2 BLM: SS	**Segment A: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment B: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.
Eschscholzia minutiflora ssp. *twisselmannii* Red Rock poppy	Mojavean desert scrub. 2,231 – 4,035 feet	March – May	Fed: None CA: None CNPS: 1B.2 BLM: SS	**Segment A: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment B: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.
Galium grande San Gabriel bedstraw	Cismontane woodland, chaparral, broadleaved upland forest, lower montane coniferous forest. Microhabitat of open chaparral and low, open oak forest and rocky slopes. 1,400 - 5,000 feet	January – July	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Likely.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Likely.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Likely.** Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment I: Likely.** Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment J: Likely.** Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment K: Likely.** Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Likely.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Githopsis tenella delicate bluecup	Chaparral, cismontane woodland. 3,609 – 6,234 feet	May – June	Fed: None CA: None CNPS: 1.B3	**Segment A: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment G: Likely.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Unlikely.** Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment K: Unlikely.** Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Harpagonella palmeri Palmer's grapplinghook	Chaparral, coastal scrub, and valley and foothill grasslands in clay soils and open shrublands. 66 – 3,133 feet	March – May	Fed: None CA: None CNPS: 4.2	**Segment A: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Likely.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment E: Possible.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment F: Possible.** Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment H: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Likely.** Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment K: Likely.** Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment 115: Possible.** Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Scientific Name Common Name[1]	Habitat Requirements[2]	Flowering period[2]	Conservation Status[3]	Potential for Occurrence within the Project Area[4]
Heuchera abramsii Abram's alumroot	Upper montane coniferous forest; rocky areas. 9,325 - 11,655 feet	July –August	Fed: None CA: None CNPS: 4.3 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
Heuchera elegans urn-flowered alumroot	Cismontane woodland, lower montane coniferous forest, montane riparian forest, upper montane coniferous forest; rocky habitat. 3,845 - 8,825 feet	May – August	Fed: None CA: None CNPS: 4.3 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Horkelia cuneata ssp. *puberula* mesa horkelia	Maritime chaparral, cismontane woodland, gravelly or sandy coastal scrub. 230 - 2,660 feet	February – July (Sept. is unusual)	Fed: None CA: None CNPS: 1B.1 USFS: Sensitive	**Segment A: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment C: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Possible.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Possible.** Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Possible.** Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Possible.** Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Hulsea vestita ssp. *gabrielensis* San Gabriel Mountains sunflower	Lower and upper montane coniferous forest; rocky habitat. 4,995 - 8,325 feet	May – July	Fed: None CA: None CNPS: 4.3 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
Hulsea vestita ssp. *pygmaea* pygmy alpine gold	Alpine boulder and rock fields, subalpine coniferous forest; granitic or gravelly sites. 9,440 - 12,990 feet	June – October	Fed: None CA: None CNPS: 1B.3 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.

Scientific Name Common Name[1]	Habitat Requirements[2]	Flowering period[2]	Conservation Status[3]	Potential for Occurrence within the Project Area[4]
Deinandra mohavensis Mojave tarplant	Chaparral, coastal scrub, and riparian scrub; mesic soils. 2,950 - 4,600 feet	July –October (January is unusual)	Fed: None CA: None CNPS: 1B.3 USFS: Sensitive BLM: SS	**Segment A: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment B: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment G: Likely.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Possible.** Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Unlikely.** Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment 115: Possible.** Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Dodecahema leptoceras slender-horned spineflower	Coastal scrub (alluvial fans), chaparral, and cismontane woodlands; sandy soils. 650 - 2,500 feet	April – June	Fed: FE CA: SE CNPS: 1B.1	**Segment A: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Likely.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment E: Likely.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Possible.** Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment I: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment J: Likely.** Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment K: Likely.** Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment 115: Possible.** Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Likely.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Dudleya blochmaniae ssp. *blochmaniae* Blochman's dudleya	Coastal bluff scrub, chaparral, coastal scrub, and valley and foothill grassland. 16 – 1,476 feet	April – June	Fed: None CA: None CNPS: 1.B1	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Possible.** Suitable habitat exists in California Annual Grassland; elevation is not appropriate; and species is known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Possible.** Suitable habitat exists in California Annual Grassland; elevation is not appropriate; and species is known within 10 miles of segment. **Segment F: Unlikely.** Suitable habitat exists in California Annual Grassland; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment G: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Possible.** Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Likely.** Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment 115: Unlikely.** Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment 2a: Unlikely.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Dudleya cymosa ssp. *crebrifolia* San Gabriel River dudleya	Chaparral; granitic soils. 915 - 1,415 feet	April – July	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Unlikely.** Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment G: Unlikely.** Marginal habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment H: Unlikely.** Marginal habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Unlikely.** Marginal habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Unlikely.** Marginal habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Unlikely.** Marginal habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 2a: Unlikely.** Marginal habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Dudleya densiflora San Gabriel Mountains Dudleya	Chaparral, coastal scrub, lower montane coniferous forest; in crevices and on decomposed granite on cliffs and canyon walls. 985 - 1,700 feet	March –July	Fed: None CA: None CNPS: 1B.1 USFS: Sensitive	**Segment A: Unlikely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Unlikely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment C: Unlikely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Unlikely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment F: Unlikely.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment G: Possible.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Possible.** Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Possible.** Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Unlikely.** Suitable habitat exists in Riversidian Sage Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment 2a: Unlikely.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.

Scientific Name Common Name[1]	Habitat Requirements[2]	Flowering period[2]	Conservation Status[3]	Potential for Occurrence within the Project Area[4]
Dudleya multicaulis many-stemmed dudleya	Coastal scrub, chaparral, and valley and foothill grassland; usually on clay soils or grassy slopes. 45 - 2,590 feet	April – July	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	**Segment A: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Likely.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Likely.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Possible.** Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Possible.** Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Likely.** Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment 115: Possible.** Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Eriogonum callistum Tehachapi buckwheat	Chaparral. 4,593 – 4,921 feet	May – July	Fed: None CA: None CNPS: 1.B1	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment G: Possible.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Unlikely.** Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment K: Unlikely.** Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Eriogonum kennedyi var. *alpigenum* Southern alpine buckwheat	Alpine boulder and rock fields, subalpine coniferous forest; granitic, gravelly soils. 8,530 - 11,480 feet	July – September	Fed: None CA: None CNPS: 1B.3 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
Eriogonum kennedyi var. *pinicola* Kern buckwheat	Chaparral and pinyon and juniper woodland. 4,396 – 6,398 feet	May – June	Fed: None CA: None CNPS: 1.B1 BLM: SS	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. **Segment D: Unlikely.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment G: Possible.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Unlikely.** Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment K: Unlikely.** Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Eriogonum microthecum var. johnstonii Johnston's buckwheat	Subalpine coniferous forest, upper montane coniferous forest: rocky soils. 7,300 - 9,515 feet	July – September	Fed: None CA: None CNPS: 1B.3 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.

Scientific Name Common Name[1]	Habitat Requirements[2]	Flowering period[2]	Conservation Status[3]	Potential for Occurrence within the Project Area[4]
Castilleja gleasonii Mt. Gleason Indian Paintbrush	Lower montane coniferous forest, pinyon and juniper woodland; granitic soils. 3,805 - 7,120 feet	May – June	Fed: None CA: SR CNPS: 1B.2 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.
Castilleja plagiotoma Mojave Indian paintbrush	Great Basin scrub, Joshua tree woodland, lower montane coniferous forest, pinyon and juniper woodland. 1,000 - 8,325 feet	April – June	Fed: None CA: None CNPS: 4.3 USFS: Sensitive	**Segment A: Possible.** Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Possible.** Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment C: Possible.** Suitable habitat exists in Joshua Tree Woodland and Rabbitbrush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in Joshua Tree Woodland and Rabbitbrush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Possible.** Suitable habitat exists in Joshua Tree Woodland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** While suitable habitat is not known on this segment according to GAP data, it is likely that small patches of habitat may be present in the northern portions;; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.
Centromadia parryi ssp. *australis* southern tarplant	Vernal pools, vernally mesic valley and foothill grassland, marshes and swamps. 0 – 1401 feet	May – November	Fed: None CA: None CNPS: 1B.1	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Possible.** Suitable habitat exists in California Annual Grassland; elevation is not appropriate; species is known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in California Annual Grassland; elevation is appropriate; species is not known within 10 miles of segment. **Segment E: Possible.** Suitable habitat exists in California Annual Grassland; elevation is not appropriate; species is known within 10 miles of segment. **Segment F: Unlikely.** Suitable habitat exists in California Annual Grassland; elevation is not appropriate; species is not known within 10 miles of segment. **Segment G: Likely.** Suitable habitat exists in California Annual Grassland; elevation is appropriate; species is known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in California Annual Grassland; elevation is appropriate; species is not known within 10 miles of segment. **Segment I: Likely.** Suitable habitat exists in California Annual Grassland; elevation is appropriate; species is known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment 115: Unlikely.** Suitable habitat exists in California Annual Grassland; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
Chorizanthe parryi var. *fernandina* San Fernando Valley spineflower	Coastal scrub; sandy soils. 490 - 4,000 feet	April – July	Fed: FC CA: SE CNPS: 1B.1 USFS: Sensitive	**Segment A: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment E: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment G: Likely.** Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Likely.** Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment I: Likely.** Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment J: Likely.** Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment K: Likely.** Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment 115: Likely.** Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.
Chorizanthe parryi var. *parryi* Parry's spineflower	Chaparral, coastal scrub; sandy or rocky openings. 100 - 3,700 feet	April – June	Fed: None CA: None CNPS: 1B.1 USFS: Sensitive	**Segment A: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Likely.** Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment E: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment G: Likely.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Likely.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment I: Likely.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment J: Likely.** Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment K: Likely.** Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment 115: Possible.** Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Likely.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.

Scientific Name Common Name[1]	Habitat Requirements[2]	Flowering period[2]	Conservation Status[3]	Potential for Occurrence within the Project Area[4]
Chorizanthe xanti var. *leucotheca* White-bracted spineflower	Mojavean desert scrub and pinyon and juniper woodland; sandy or gravelly soils. 984 – 3,937 feet	April – June	Fed: None CA: None CNPS: 1B.2	**Segment A: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Unlikely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment.
Claytonia lanceolata var. *peirsonii* Peirson's spring beauty	Subalpine coniferous forest, upper montane coniferous forest; on scree. 7,005 - 9,005 feet	May – June	Fed: None CA: None CNPS: 1B.1 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
Cymopterus deserticola desert cymopterus	Joshua tree woodland, Mojavean desert scrub, 2,000 – 5,000 feet.	March -May	Fed: None CA: None CNPS: 1B.2 BLM: SS	**Segment A: Possible.** Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Possible.** Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment C: Possible.** Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Possible.** Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.
Deinandra arida Red Rock tarplant	Mojavean desert scrub; clay soils and volcanic tuff. 984 – 3,117 feet	April – November	Fed: None CA: None CNPS: 1B.2 BLM: SS	**Segment A: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment B: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.
Deinandra minthornii Santa Susana tarplant	Chaparral and coastal scrub. 919 – 2,493 feet	July – November	Fed: None CA: None CNPS: 1B.2	**Segment A: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Likely.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Possible.** Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Possible.** Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Possible.** Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Scientific Name Common Name¹	Habitat Requirements²	Flowering period²	Conservation Status³	Potential for Occurrence within the Project Area⁴
Brodiaea filifolia thread-leaved brodiaea	Inland valley and foothill habitats: coastal sage scrub, chaparral, seeps, annual grasslands; clay, loamy sand, or alkaline silt-clay soils. 75 - 3,660 feet	May – June	Fed: FT CA: SE CNPS: 1B.1	**Segment A: Absent.** Required heavy clay soil not present; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** Required heavy clay soil not present; elevation is appropriate; and species is not known within 10 miles of segment. **Segment C: Absent.** Required heavy clay soil not present; elevation is appropriate; and species is not known within 10 miles of segment. **Segment D: Absent.** Required heavy clay soil not present; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Absent.** Required heavy clay soil not present; elevation is appropriate; and species is not known within 10 miles of segment. **Segment F: Absent.** Required heavy clay soil not present; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Absent.** Required heavy clay soil not present; elevation is appropriate; and species is not known within 10 miles of segment. **Segment H: Absent.** Required heavy clay soil not present; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Absent.** Required heavy clay soil not present; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Absent.** Required heavy clay soil not present; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Absent.** Required heavy clay soil not present; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** Required heavy clay soil not present; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Absent.** Required heavy clay soil not present; elevation is appropriate; and species is not known within 10 miles of segment.
California macrophylla round-leaved filaree	Cismontane woodlands and valley and foothill grasslands in clay soils. 49 to 3,937 feet	March – May	Fed: None CA: None CNPS: 1B.1	**Segment A: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Likely.** Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Likely.** Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment. **Segment E: Likely.** Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Likely.** Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment. **Segment G: Likely.** Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Likely.** Suitable habitat exists in California Annual Grassland and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment I: Likely.** Suitable habitat exists in California Annual Grassland and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment 115: Likely.** Suitable habitat exists in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment. **Segment 2a: Likely.** Suitable habitat exists in Interior Live Oak Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Calochortus clavatus var. *clavatus* club-haired mariposa lily	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland. 245 - 4,265 feet.	May – June	Fed: None CA: None CNPS: 4.3	**Segment A: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Possible.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment C: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Possible.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment F: Possible.** Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Possible.** Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Possible.** Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Possible.** Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Calochortus clavatus var. *gracilis* slender mariposa lily	Chaparral, coastal scrub, and valley and foothill grassland. 1,200 - 3,330 feet	March – June	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	**Segment A: Unlikely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; segment is outside of species' known range and species is not known within 10 miles of segment. **Segment B: Unlikely.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; species is known within 10 miles of segment; and species is not known north of the Transverse Ranges (Aspen 2009, USFS 2010a) . **Segment C: Unlikely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; species is known within 10 miles of segment; and species is not known north of the Transverse Ranges (Aspen 2009, USFS 2010a). **Segment D: Present.** Species known within segment corridor. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment E: Unlikely.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; species is known within 10 miles of segment; and species is not known north of the Transverse Ranges (Aspen 2009, USFS 2010a). **Segment F: Unlikely.** Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; species is not known within 10 miles of segment; and species is not known north of the Transverse Ranges (Aspen 2009, USFS 2010a). **Segment G: Present.** Species known within segment corridor. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment I: Present.** Species known within segment corridor. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment J: Likely.** Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment K: Likely.** Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment 115: Possible.** Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; species is known within 10 miles of segment; and species is not known north of the Transverse Ranges (Aspen 2009, USFS 2010a). **Segment 2a: Likely.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Calochortus palmeri var. *palmeri* Palmer's mariposa lily	Chaparral, lower montane coniferous forest, meadows, and seeps; mesic soils. 3,300 - 7,200 feet	April – July	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment G: Likely.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Unlikely.** Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment K: Unlikely.** Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.

Scientific Name Common Name[1]	Habitat Requirements[2]	Flowering period[2]	Conservation Status[3]	Potential for Occurrence within the Project Area[4]
Calochortus plummerae Plummer's mariposa lily	Coastal scrub, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland; alluvial or granitic, rocky or sandy soils. 325 - 5,580 feet	May – July	Fed: None CA: None CNPS: 1B.2 USFS Sensitive	**Segment A: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Likely.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment E: Likely.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Possible.** Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment I: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment J: Likely.** Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment K: Likely.** Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment 115: Possible.** Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Calochortus striatus alkali mariposa lily	Alkaline, mesic sites within chaparral, chenopod and Mojavean desert scrub; meadows and seeps. 300 - 4,500 feet	April – June	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive BLM: SS	**Segment A: Likely.** Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment B: Likely.** Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Likely.** Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in Joshua Tree Woodland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Likely.** Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment G: Likely.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Likely.** Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral elevation is appropriate; and species is known within 10 miles of segment. **Segment I: Likely.** Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment J: Possible.** Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Likely.** Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment 2a: Likely.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Calochortus weedii var. *vestus* late-flowered mariposa lily	Chaparral, cismontane woodland, and riparian woodland. 880 - 6,250 feet	June – August	Fed: None CA: None CNPS: 1B.2 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Possible.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Possible.** Suitable habitat exists in Chamise Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Possible.** Suitable habitat exists in Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Possible.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Calystegia peirsonii Peirson's morning-glory	Chaparral, chenopod scrub, cismontane woodland, coastal scrub, lower montane coniferous forest, valley and foothill grassland. 1,000 - 4,500 feet	April – June	Fed: None CA: None CNPS: 4.2	**Segment A: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Likely.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment E: Likely.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Likely.** Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; and species is known within 10 miles of segment. **Segment G: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Present.** Species known within segment corridor. Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment I: Likely.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment J: Likely.** Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment K: Likely.** Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment 115: Likely.** Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment 2a: Likely.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Canbya candida white pygmy-poppy	Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland; sandy, granitic soils. 1,970 - 3,940 feet	March – June	Fed: None CA: None CNPS: 4.2 USFS: Sensitive	**Segment A: Likely.** Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment B: Likely.** Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Likely.** Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Likely.** Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment I: Possible.** While suitable habitat is not known on this segment according to GAP data, it is likely that small patches of habitat may be present in the northern portions; elevation is appropriate; and species is known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment.

TABLE 8. SPECIAL-STATUS PLANT SPECIES WITH POTENTIAL TO OCCUR WITHIN THE PROJECT AREA.

Scientific Name Common Name¹	Habitat Requirements²	Flowering period²	Conservation Status³	Potential for Occurrence within the Project Area⁴
Allium shevockii Spanish Needle onion	Pinyon and juniper woodland and upper montane coniferous forest. 2,789 – 8,202 feet.	May - June	Fed: None CA: None CNPS: 1B.3 USFS: None BLM: SS	**Segment A: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is appropriate; species is known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment.
Androsace elongata ssp. *acuta* California androsace	Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, and valley and foothill grassland. 1000 - 3,940 feet	March – June	Fed: None CA: None CNPS: 4.2 USFS: Watch List	**Segment A: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Possible.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment C: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Possible.** Suitable habitat exists in California Annual Grassland and Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment F: Possible.** Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Possible.** Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Possible.** Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Possible.** Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Arenaria macradenia var. *kusche* Kusche's sandwort	Openings in chaparral, on granitic soils. 4,000 - 5,600 feet	June – July	Fed: None CA: None CNPS: 1B.1 USFS Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Unlikely.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment G: Possible.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Unlikely.** Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment K: Unlikely.** Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 2a: Possible.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment.
Arctostaphylos gabrielensis San Gabriel Manzanita	Chaparral. 4,995 feet	March	Fed: None CA: None CNPS: 1B.2 USFS Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Unlikely.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment G: Unlikely.** Suitable habitat exists in Chamise Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment H: Unlikely.** Suitable habitat exists in Chamise Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment I: Unlikely.** Suitable habitat exists in Chamise Chaparral and Scrub Oak Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment J: Unlikely.** Suitable habitat exists in Chamise Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment K: Unlikely.** Suitable habitat exists in Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 2a: Unlikely.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Astragalus bicristatus crested milk-vetch	Lower montane coniferous forest, upper montane coniferous forest; sandy or rocky soils, mostly carbonate. 5,580 - 9,005 feet	May – August	Fed: None CA: None CNPS: 4.3 USFS Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.

Scientific Name Common Name[1]	Habitat Requirements[2]	Flowering period[2]	Conservation Status[3]	Potential for Occurrence within the Project Area[4]
Astragalus brauntonii Braunton's milk-vetch	Chaparral, coastal scrub, valley and foothill grassland, on south-, west-, and east-facing slopes, in open areas, following fire or other physical disturbance; usually sandstone with carbonate layers. <2,100 feet	January – August	Fed: FE CA: None CNPS: 1B.1	**Segment A: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment F: Possible.** Suitable habitat exists (F2 part) in California Annual Grassland; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment H: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment I: Possible.** Suitable habitat exists in California Annual Grassland, Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment J: Possible.** Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment K: Possible.** Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 115: Possible.** Suitable habitat exists in California Annual Grassland and Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Unlikely.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is not appropriate; and species is not known within 10 miles of segment.
Astragalus lentiginosus var. *antonius* San Antonio milk-vetch	Lower montane coniferous forest, upper montane coniferous forest. 4,920 - 8,530 feet in elevation.	April – July	Fed: None CA: None CNPS: 1B.3 USFS Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is appropriate; species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.
Astragalus lentiginosus var. *sierrae* Bear Valley woollypod	Mojavean desert scrub, meadows and seeps, pinyon and juniper woodland, and upper montane coniferous forest. 5,994 - 8,660 feet	April – August	Fed: None CA: None CNPS: 1B.2 USFS Sensitive	**Segment A: Unlikely.** Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Unlikely.** Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment C: Unlikely.** Suitable habitat exists in Joshua Tree Woodland, Mojave Creosote Bush Scrub, and Mojave Wash Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Unlikely.** Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment E: Unlikely.** Suitable habitat exists in Joshua Tree Woodland and Mojave Creosote Bush Scrub; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment.
Berberis nevinii Nevin's barberry	Chaparral, coastal and riparian scrub, and cismontane woodland; gravelly soils. Associated with steep slopes and low-grade sandy washes. 900 - 2,700 feet	March – June	Fed: FE CA: SE CNPS: 1B.1	**Segment A: Possible.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment B: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment C: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment D: Likely.** Suitable habitat exists in Chamise Chaparral, Mojave Creosote Bush Scrub, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment E: Likely.** Suitable habitat exists in Mojave Creosote Bush Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is appropriate; and species is not known within 10 miles of segment. **Segment G: Likely.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment H: Likely.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment I: Likely.** Suitable habitat exists in Chamise Chaparral, Riversidian Sage Scrub, and Scrub Oak Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment J: Likely.** Suitable habitat exists in Chamise Chaparral and Riversidian Sage Scrub; elevation is appropriate; and species is known within 10 miles of segment. **Segment K: Likely.** Suitable habitat exists in Riversidian Sage Scrub and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment. **Segment 115: Possible.** Suitable habitat exists in Riversidian Sage Scrub; elevation is appropriate; and species is not known within 10 miles of segment. **Segment 2a: Likely.** Suitable habitat exists in Interior Live Oak Chaparral, Scrub Oak Chaparral, and Southern Mixed Chaparral; elevation is appropriate; and species is known within 10 miles of segment.
Botrychium crenulatum scalloped moonwort	Bogs and fens, lower montane coniferous forest, meadows and seeps, and marshes and swamps. 5,000 - 10,765 feet	June – July	Fed: None CA: None CNPS: 2.2 USFS: Sensitive	**Segment A: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment B: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment C: Absent.** No suitable habitat exists; elevation is not appropriate; and species is not known within 10 miles of segment. **Segment D: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment E: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment F: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment G: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment H: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment I: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment J: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment K: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 115: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment. **Segment 2a: Absent.** No suitable habitat exists; elevation is not appropriate; species is not known within 10 miles of segment.

4.6.3 Wildlife Movement Corridors

Wildlife movement includes migration (usually one way per season), inter-population movement (i.e., long-term genetic flow) and small travel pathways (i.e., daily movement corridors within an animal's territory). While small travel pathways usually facilitate movement for daily home range activities, such as foraging or escape from predators, they also provide connection between outlying populations and the main corridor, permitting an increase in gene flow among populations. Without the ability to move among and within natural habitats, species become more susceptible to fire, flood, disease, and other environmental disturbances and show greater rates of local extinctions (Penrod et. al 2004).

These linkages among habitat types can extend for miles from primary habitat areas and occur on a large scale throughout California. Habitat linkages facilitate movement between populations located in discrete areas and populations located within larger habitat areas. The mosaic of habitats found within a large-scale landscape result in wildlife populations that consist of discrete sub-populations. Even where patches of pristine habitat are fragmented, such as occurs with coastal scrub, the movement between wildlife populations is facilitated through habitat linkages, migration corridors and movement corridors. Depending on the condition of the corridor, genetic flow between populations may be high in frequency, thus allowing high genetic diversity within the population, or may be low in frequency. Low frequency genetic flow may potentially lead to complete isolation and, if pressures are strong, potential extinction.

The southern end of BRRTP crosses the Angeles National Forest. This portion of the Project has minimal human disturbance and according to the South Coast Linkage Project provides a wildlife movement corridor for large mammals and birds moving north to south or vice versa (Penrod et. al 2004). The northern area of the Project is located within the Mojave Desert. This portion of the desert is surrounded by agricultural land and sporadic areas of residential development. Species can move under the current ROW; however, the access roads used to maintain the transmission line also increase access by humans.

4.6.4 MIS (for ANF)

Five Management Indicator Species (MIS) identified in the ANF Land and Resource Management Plan (LRMP) (USFS 2005) occurs within BRRTP. Certain species, known as MIS, are identified as "indicators" of the health and function of the forest ecosystem in response to USFS management activities. Project-level effects on MIS are analyzed and disclosed as part of the environmental analysis under the NEPA.

Management indicator species (MIS) are selected because their population changes are believed to indicate the effects of management activities (36 CFR [Code of Federal Regulations] 219.19(a) (1), 1982) and to serve as a focus for monitoring (36 CFR 219(a) (6), 1982). The regulation (1982 Planning Rule) required the selection of vertebrate and/or invertebrate species as MIS but did not preclude the selection of other life forms. Vascular plants are included as MIS because these species are often wide-ranging and responsive to landscape-level stressors.

MIS that occur in the project area include mule deer, mountain lion (*Puma concolor*), arroyo toad, song sparrow (*Melospiza melodia*), and California spotted owl. A review was conducted to determine whether the project area was within known or potential habitat for each MIS. Table 10 describes the MIS, their associated Management Indicators, and measure and relevance to the Project within the ANF. See the *Management Indicator Species Analysis for the Barren Ridge Renewable Transmission Project* for further details and analysis of impacts to MIS in the Project area.

TABLE 10. MANAGEMENT INDICATOR SPECIES SELECTED FOR PROJECT EVALUATION

MIS Species	Indicators of Management	Measure	Relevance to Project
Mule Deer	Healthy diverse habitats	Trend in abundance and/or habitat condition	Occurs in project area
Mountain Lion	Habitat fragmentation	Trend in distribution, movement, and/or habitat conditions	Occurs in project area
Arroyo Toad	Aquatic habitat	Trend in abundance and/or habitat condition	Occurs in project area
Song Sparrow	Riparian habitat	Trend in abundance and/or habitat condition	Occurs in project area
California spotted owl	Montane conifer forest	Occupied territories and/or habitat condition	Occurs in project area

5.0 IMPACT ASSESSMENT

In order to qualitatively define the various levels of potential impact likely to occur along a given segment, the following biological impact model was developed (Figure 5-1). The model combines several facets that collectively define the value of natural biotic communities and subjects those facets to various impact features to predict impact magnitude. Specifically, the features of sensitivity, significance, and quality are examined in concert with the quantity of resources likely to be affected, and the duration of the probable impact (Table 14). The various combination of these elements results in impact predictions.

5.1 SIGNIFICANCE CRITERIA

CEQA significance thresholds were based on regulatory guidance and requirements. A significant impact is defined as "a substantial or potentially substantial, adverse change in the environment" (CEQA § 21068). Several sources were used to determine the significance criteria including the State CEQA Guidelines, National Environmental Policy Act (NEPA), and recent EIS/EIR that have been certified in Los Angeles County and Kern County. The potential impacts were evaluated relative to the standards of significance described below.

The following significance criteria are based on the CEQA environmental checklist presented in Appendix G of the CEQA Statutes and Guidelines and are used to describe the potential impacts of the proposed Project and alternatives on the sensitive biological resources that may occur in the proposed Project area (Tables 8 and 9). A project would have a significant impact on biological resources if it would result in one or more of the following:

- Have a substantial adverse effect on any riparian habitat, including Riparian Conservation Areas or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFG, USFS or USFWS;
- Have an adverse effect, either directly or through habitat modifications, on any species listed as endangered, threatened, or proposed, or critical habitat for these species;
- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, regulations, or by CDFG, USFS or USFWS;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native residents or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Expected significant impacts include disturbance and removal of natural vegetation that may be utilized by sensitive species, habitat fragmentation, and decrease in habitat quality. The environmental baseline for NEPA (40 CFR Part 1508.27) includes the following significance criteria:

- Likelihood of occurrence (low, slight, moderate, high, certain)
- Direction and magnitude (positive, neutral, negative; low, moderate, heavy, severe)
- Distribution (areal extent or volume covered)
- Duration (temporary or permanent, intermediate or continuous)
- Reversibility (yes, somewhat, no)
- Mitigation potential

- Timing
- Geographic scale (local, regional, national, and global)

Examples of non-significant biological impacts include:

- Impacts that affect a biological resource but would not substantially and adversely change or stress the resource on a long-term basis.
- Impacts to a biological resource that is already disturbed or lacks importance in the preservation of local or regional native biological diversity and productivity.

5.2 SENSITIVITY VALUES

Sensitivity levels were assigned to reflect the projected response of biological resources to Project-related activities. These sensitivity levels were based on the Habitat Assessment and Protocol Surveys described in the Methods section above, along with knowledge of the suite of special-status species associated with each vegetation community and their specific life histories.

A sensitivity value was assigned to biological resources based on regulatory protection afforded to certain vegetation communities or habitats, CEQA and NEPA guidelines (i.e., significance criteria), federal or state listed species, sensitive species, USFS Management Indicator Species, species and habitat relative rarity, importance to migratory corridors, species diversity and abundance.

A maximum, moderate, or minimal sensitivity level—defined below—was assigned to each biological resource:

5.2.1 Wildlife Sensitivity Levels

A **maximum** level would be expected where:

- Federal or state listed species are present or suitable habitat is present;
- Highly unique habitats that are usually of very limited areal extent in region under study (e.g., riparian areas) are present;
- Bureau of Land Management Sensitive species are present;
- Forest Service Sensitive species are present;
- Highly productive, unique protected habitat (i.e., designated critical habitat, Riparian Conservation Area) if present; or
- Important wildlife range (e.g., breeding habitat) is present.
- A wildfire has occurred in the past two years

A **moderate** level would be expected where:

- Species significant to ecosystem (e.g., important predator or prey species) are present;
- Significant Ecological Areas are present;
- Diverse habitats or habitat containing state protected biota are present;
- Species documented geographical range
- Wildlife migration corridor (i.e., one way per season, long-term genetic flow, and daily movement corridors within an animal's territory) are present.
    - Selected Forest Service Management Indicator Species are present or habitat is present;

A **minimal** level would be expected where:

- Widespread natural communities with low diversity are present;

- Areas with economic or recreational value (e.g., diverse wildlife populations or wildlife viewing areas) are present; or
- Highly modified or degraded areas and/or areas where natural communities have been replaced by human development (e.g., agricultural areas) are present.

5.2.2 Vegetation Sensitivity Levels

A **maximum** level would be expected where:

- Federal or state listed species are present;
- Forest Service Sensitive species and select MIS are present;
- Bureau of Land Management Sensitive species are present;
- Protected vegetation communities are present;
- Significant number of sensitive species dependent upon the vegetation community is present;
- Little to no weeds (0 – 10%) are present within a given area; or
- A wildfire has occurred in the past two years.

A **moderate** level would be expected where:

- Sensitive species are present (CNPS list 3 or 4); or
- Vegetation communities that are of limited areal extent within the region are present. The implication here is that such communities or habitats are of greater extent than those listed under "maximum" above, but not nearly as common as those listed in "minimal" below.

A **minimal** level would be expected where:

- Highly disturbed communities (e.g., croplands, grazing) are present.
- Weeds are the dominant species present.

TABLE 11. SENSITIVITY OF WILDLIFE SPECIES

	Sensitivity Level	Wildlife or Habitat
Federally listed, state listed and select MIS species	Maximum	San Gabriel Mt. slender salamander, arroyo toad, yellow-blotched salamander, CA red-legged frog, foothill yellow-legged frog, Mt. yellow-legged frog, burrowing owl, Swainson's hawk, western yellow-billed cuckoo, southwestern willow flycatcher, peregrine falcon, CA condor, bald eagle, coastal CA gnatcatcher, CA spotted owl, least Bell's vireo, pallid bat, Townsend's big-eared bat, western red bat, San Gabriel Mt. Bighorn sheep, white-eared pocket mouse, Tehachapi pocket mouse, LA pocket mouse, Mojave ground squirrel, Santa Ana sucker, unarmored threespine stickleback, arroyo chub, Santa Ana speckled dace, CA legless lizard, southern rubber boa, southwestern pond turtle, San Bernardino ringneck snake, desert tortoise, San Bernardino Mt. kingsnake, coastal rosy boa, coast horned lizard, two-striped garter snake, Riverside fairy shrimp, American badger, kit fox
Habitat	Maximum	Riparian/wetland (i.e., coast live oak woodland, alluvial wash scrub, Mojave wash scrub, riparian willow scrub, riparian woodland, southern sycamore-alder, open water/reservoir/aqueduct/pond, disturbed wetland), Joshua trees, interior live oak chaparral, designated critical habitat
	Moderate	Diverse habitat (i.e., California annual grassland, chamise chaparral, scrub oak chaparral, southern mixed chaparral)
	Minimal	Agricultural lands, disturbed/developed, ruderal vegetation

	Sensitivity Level	Wildlife or Habitat
Wildlife migration corridors/ Species Range	Moderate	Species-specific migration corridors/designated species range. This would include the documented Mohave ground squirrel designated range.
SEA	Maximum	Significant Ecological Areas
Avian Risk*	Maximum	High avian risk factor
	Moderate	Moderate avian risk factor
	Minimal	Low avian risk factor

*As determined by POWER (2010b).

TABLE 12. SENSITIVITY OF PLANT SPECIES

	Sensitivity Level	Plants
Federally listed, state listed, FS Sensitive, and BLM Sensitive	Maximum	Braunton's milkvetch, slender mariposa lily, Palmer's mariposa lily, Plummer's mariposa lily, alkali mariposa lily, late-flowered mariposa lily, Kusche's sandwort, San Gabriel Manzanita, San Antonio milk-vetch, Bear valley woolypod, Nevin's barberry, Mt. Gleason Indian paintbrush, Mojave Indian paintbrush, San Fernando Valley spineflower, Parry's spineflower, Peirson's spring beauty, Mojave tarweed, slender-horned spineflower, San Gabriel River dudleya, San Gabriel Mountains dudleya, many-stemmed dudleya, southern alpine buckwheat, Johnston's buckwheat, San Gabriel bedstraw, Abram's alumroot, urn-flowered alumroot, mesa horkelia, San Gabriel Mountains sunflower, pygmy alpine gold, California satintail, fragrant pitcher sage, lemon lily, San Gabriel linanthus, Peirson's lupine, Hall's monardella, rock monardella, Baja navarretia, short-joint beavertail, woolly mountain-parsley, Rock Creek broomrape, fringed grass-of-parnassus, Gairdner's yampah, Transverse Range phacelia, Ewan's cinquefoil, southern mountains skullcap, Parish's checkerbloom, chickweed oxytheca, Laguna Mountains jewel flower, southern jewel flower, San Bernardino aster, Sonoran maiden fern
FS-Watch CNPS list 3 or 4	Moderate	CA androsace, club-haired mariposa lily, Peirson's morning-glory, ocellated lily, Southern California black walnut, Gairdner's yampah, Lemmon's syntrichopappus

All wetlands and waters are considered highly sensitive areas per mandates of the federal and state resource agencies. In addition to wetlands and riparian areas, sensitive uplands such as the Riversidian Sage Scrub and Joshua Tree Woodland are considered sensitive. The sensitivity of certain native scrub communities is due to the number of sensitive species dependent upon those communities and the rapid decline in areas of these native scrub communities that have occurred from development.

The sensitivity of Joshua tree woodlands and native forests is due to the natural rarity of these habitats in Southern California and the high functions and values of these communities as wildlife movement corridors, roosting areas, resting sites, and shelter sites, and the difficulty and length of time needed to restore or replace losses of these communities.

Agricultural areas such as croplands and ruderal areas are considered to have low sensitivity due to the lack of native vegetation, continuous disturbance, and lack of sensitive species known to occur in these areas. Although ruderal areas occasionally provide habitat for a few sensitive species, the ruderal habitat in the Project study area is fragmented and usually bordered by development.

TABLE 13. SENSITIVITY OF VEGETATION COMMUNITIES

	Sensitivity Level	Vegetation Community or Cover Type
Riparian, Wetlands, and Water	Maximum	Coast live oak woodland, alluvial wash scrub, Mojave wash scrub, riparian willow scrub, riparian woodland, southern sycamore-alder, open water/reservoir/aqueduct/pond, disturbed wetland
Uplands	Maximum	Riversidian sage scrub, Mojave Creosote bush scrub, rabbitbrush scrub, Mojavean mixed scrub
	Moderate	California annual grassland, chamise chaparral, scrub oak chaparral, southern mixed chaparral
	Minimal	Agricultural lands, disturbed/developed, ruderal vegetation
Woodlands	Maximum	Joshua tree woodland, interior live oak chaparral,

Habitat Quality Definition

The following definitions are based on the quality of the habitat and the suitability of the vegetation community to species needs based on the disturbance. The habitat types are based on the vegetation communities that are present in the Project area (e.g., riparian areas) and areas that are contiguous with little to no disturbance. This definition does not assume species density to be a measure of habitat quality since this correlation is a misleading indicator of habitat quality (B. Van Home 1983). Sensitivity is also not a factor in defining habitat quality, but is rather a measure of degradation or alteration.

- **Good –** Relatively undisturbed example of a particular habitat type.
- **Moderate** – Somewhat degraded or altered example of a particular habitat type. Some disturbance is obvious, even to a casual observer.
- **Low** – Highly degraded or altered example of a particular habitat type. Disturbance is present to the point that natural integrity is destroyed, or very nearly so.

Quantity Definition/Ground Disturbance Model

For biological resources the ground disturbance levels described in Chapter 2 were used to determine the quantity of habitat that could potentially be disturbed or removed due to construction and maintenance of the Project components. Below are the three levels of ground disturbance used for biology:

- **N –** New roads needed to construct Project. This need, coupled with the amount of land to be disturbed by tower sites, pulling stations, and spur roads, results in the greatest quantity of natural community disruption. This designation includes Level 3-6 of the ground disturbance model in Chapter 2.
- **U –** Existing roads require upgrading. Somewhat less disturbance characterizes this category. Impact is more closely limited to that created by tower sites, clearing, spur road construction, and pulling station clearings. This includes Level 2 of the ground disturbance model in Chapter 2.
- **S** – Existing roads are adequate with no new road building needed. Impact in this category is limited entirely to existing spur roads, tower sites, and existing disturbed areas created by previous conductor pulling and tensioning sites. This is potentially the lowest quantity of natural community disruption. This includes Level 1 of the ground disturbance model in Chapter 2.
- **H** – Along Segment H and portions of Segment D and Segment 2a on National Forest System lands, the USDA Forest Service is requiring that all new transmission lines be constructed almost exclusively by helicopter construction. Impacts include construction from helicopter landing zones, helicopter fly yards, structures, and fueling stations.

Duration of Project Activities

The duration of the Project activities on biological resources have been broken into two categories:

- **Short** – Areas damaged by construction will return to a preconstruction situation in less than ten years after construction. Short-term effects that contribute to recovery consist of indirect effects to biological resources associated with temporary noise, vehicular traffic, dust, and general construction activities. Construction activities would include structure work areas, pulling and tensioning sites, sleeving and stringing operations, guard structures, material staging sites, concrete batch plants, and construction of access and spur roads.
- **Long** – The recovery of natural communities from the type of impacts associated with construction of the Project will take more than ten years. This category is based on the amount of various types of habitat disturbed by movement of equipment and materials, construction and installation of transmission towers and conductors, and construction of access roads and maintenance of the transmission lines. Long-term effects also consist of the structure footprint and foundations, along with access roads and activities associated with long-term human access.

5.3 IMPACT TYPES

The proposed Project is expected to create short-term construction-related impacts, and long-term or permanent displacement from the new transmission towers. Biological resources can be directly affected by construction, operation, and maintenance of transmission facilities. A summary of potential impacts to biological resources is provided in Table 14.

Impacts to biological resources inventoried were evaluated considering the following factors:

- Sensitivity levels (e.g., occurrence of affected biological resource areas);
- Habitat quality;
- Habitat quantity (i.e., quantity of habitat that could potentially be disturbed or removed due to construction and maintenance);
- Duration of Project activities (i.e., construction, operation, and maintenance related activities);
- Significance level (CEQA and NEPA guidelines); and
- Mitigation measures to reduce initial impact levels.

The impact model served as the basis for an impact assessment table in which initial impact levels, impact types, descriptions of impacts, recommended mitigation and their effectiveness, and residual impacts were outlined for each mile of the alternative corridors. Essentially, an entry was made in the table wherever there was a change in vegetation type or wildlife range for a particular length of corridor.

Based on the sensitivity levels, significance criteria, and impact types, the potential effects of the proposed Project have been categorized as either "High," "Moderate" (when the actual outcome of an impact would be influenced by presently unknown or undetermined factors), or "Low."

High Impact – Impacts which could potentially cause significant unavoidable harm (injure or kill) or stress to wildlife and/or vegetation. Stress is defined as actions that would potentially remove or destroy habitat, or displace or otherwise influence the species.

Moderate Impact – Impacts which could potentially cause some stress to wildlife and/or vegetation.

Low Impact – Impacts which could potentially cause little detectable stress to wildlife and/or vegetation.

5.3.1 Wildlife Impact Level

High impacts on wildlife occur when an action would create a significant adverse change in present wildlife populations, individuals, or habitats. Significant adverse changes included impacts that:

- Create an unavoidable adverse effect on a federally-listed threatened or endangered animal species;
- Create an unavoidable adverse effect on CDFG sensitive animal species;
- Create an unavoidable adverse effect on USFS Sensitive or select management indicator animal species such as arroyo toad or California spotted owl;
- Significantly reduce the quantity or quality of a regionally or nationally significant wildlife population or habitat area;
- Significantly reduce the quantity or quality of habitat critical for the survival of local populations, such as riparian areas or migration corridors; or
- Adversely affect rare or declining species or other species with high public profiles, values, or appeal (e.g., deer, California condor) at the regional level. For this Project, the regional level is considered the South Coast and Mojave Desert Ecosystems.

Moderate impacts on wildlife occur if the impacts:

- Cause a local reduction in the quantity or quality of wildlife habitats (as opposed to regional reductions); or
- Marginally reduce the productivity of adjacent wildlife habitats or resources (such as nest sites).

Low impacts occur when an action creates an impact that would:

- Create an effect that could be largely mitigated;
- Reduce the quantity or quality of wildlife habitat or species confined to the site of the action;
- Cause no significant effect on productivity of adjacent wildlife habitat;
- Temporarily disturb common wildlife species;
- Reduce habitat that is very common in the Project vicinity;
- Adversely affect relatively common species at a local level (i.e., occurring within the immediate vicinity of the Project and not affecting regional populations); or
- Cause temporary effects or an effect that can be minimized by site planning or by placing seasonal restrictions on construction activities.

5.3.2 Vegetation Impact Levels

Biological resources can be directly affected by construction, operation, and maintenance of transmission facilities. Short-term impacts can occur during construction and usually have minimal lasting effects on vegetation. Other impacts are long term, such as weed infestations that can permanently alter plant species composition and communities.

Direct impacts to vegetation would be caused by access road construction, road improvements, clearing, structure construction and ongoing maintenance activities. Road and structure construction would remove vegetation, including the root system and topsoil. Clearing can remove the overstory, which indirectly results in a change to the ecological community of the understory. Vehicular traffic can crush vegetation and cause dust that clogs the pores of plants. Soil compaction can also indirectly reduce plant productivity.

A **High** impact would be expected where:

- Native plants and their ecological communities are removed from the local seedbank (i.e., topsoil and the root system of the plant are removed or altered), or noxious weeds are spread due to construction or maintenance;
- An unavoidable adverse effect on a federally-listed Threatened or Endangered plant species is created; or
- An unavoidable adverse effect on a USFS/BLM Sensitive plant species or select MIS (e.g., Bigcone Douglas-fir) is created.

Moderate impact would be expected where:

- Native plants and their ecological communities are temporarily disturbed (e.g., the soil is compacted, but the topsoil and the root system remain intact).

Low impact would be expected where:

- Native plants and their ecological communities are disturbed without displacing the root system or compacting soils.

Operations and Maintenance –Vegetation management along transmission line right of way is required by the FERC and is outlined in LADWP's Vegetation Management Program. Within the Project area tall-growing brush and trees that could interfere with the lines would be removed. California Public Resource Code 4292 requires clearing of flammable vegetation to reduce fire hazards around specific structures that support certain connector or types of electrical apparatus. This cleared area (10 foot radius) is required to be kept clear of flammable vegetation during the entire fire season. Annually, the vegetation around subject towers is removed and maintained to bare ground through the entire fire season.

California Public Resource Code 4293 requires specific clearance between the conductor and vegetation. The clearance increase as the line voltage increases. For the Project transmission lines, PRC 4293 requires that up to 15' clearance between the conductor and vegetation be maintained at all times in all conditions (i.e., sway, sag, snow loading, etc.). This code also requires the removal of hazard trees adjacent to the line that may fall into the line. PRC 4293 defines hazard trees as "Dead trees, old decadent or rotten trees, trees weakened by decay or disease and trees or portions thereof that are leaning toward the line which may contact the line from the side or may fall on the line shall be felled, cut, or trimmed so as to remove such hazard.". For the Project area, the hazard tree zone is variable in width depending primarily on the height of trees adjacent to the transmission line, the topography and the sway of the conductor's mid-span.

Regular inspection and maintenance of overhead facilities is crucial for maintaining uniform, adequate, safe and reliable service. Continued use of access roads would cause indirect impacts such as soil compaction and dust. Soil compaction damages root systems and dust clogs leaf surfaces, and can affect photosynthesis (Sharifi et al. 1997). Direct impacts would be minimal as routine patrols are generally conducted from a patrol vehicle travelling on existing access roads or trails. These activities typically involve using light vehicle to inspect for missing or damaged equipment. Access roads are also checked for water erosion, rocks or slides that may block access, overhanging brush, trees that intrude into the roadway, and other combustible materials that may cause a fire hazard. Generally, no surface disturbance or off-road activity occurs during routine patrols. Routine patrols will not disturb riparian vegetation associated with stream banks. Overall, maintenance-related impacts could be low to moderate, and would continue for the life of the line.

5.3.3 Helicopter Impact Assessment

Noise and activity associated with the helicopter construction may disturb wildlife in the Project area and cause changes in wildlife occurrences and distribution. Noise disturbances include helicopter use, hauling, and other activity associated with helicopter construction. While helicopter effects on wildlife have not been extensively studied, some research has found that noise from aircraft, including helicopters, can be very stressful on wildlife. Helicopter noise can cause panic reactions in animals, leading to increased potential for injury due to collisions or stumbling as opposed to regular escape responses, which are generally more controlled (Radle 2007). A USFWS survey of biologists, refuges, hatcheries, and research centers found that waterfowl are most frequently disturbed by noise from aircraft and that wildlife reactions can range from minor responses in animal behavior to possible abandonment of an area (Radle 2007). Animals that disperse from an area due to helicopter construction may also be subject to a greater risk of mortality than previously depending on their familiarity with the new area and the presence of predators. Dispersal- or noise-induced stress may lower animals' fitness and temporarily reduce their abilities to mate and raise young or efficiently forage.

Several other effects are possible as a result of helicopter construction. Helicopter construction would require the selection and use of helicopter staging areas, for which any existing vegetation would need to be cleared prior to any helicopter actions. These sites may also require grading and/or cut and fill activities as necessary for use. The disturbance caused at these sites—such as removal of the native seed bank or compaction of the soil within the sites—may result in more favorable conditions for the spread of noxious weed species. Use of helicopters both at the staging areas and at construction areas will raise fugitive dust from the ground without utilization of proper dust control methods such as those suggested in Mitigation Measure AIR-2a, Implement Construction Fugitive Dust Control Plan. Dust that settles onto vegetation may reduce plants' photosynthetic capabilities, causing a reduction in vigor and an increase in susceptibility to disease. Excessive declines in the health of plants can affect the health of the ecosystem, having wide-ranging effects that may touch on wildlife that also inhabit the area and rely on the vegetation for food or cover.

Helicopter construction would also have some beneficial effects, however. It would reduce the amount of road access required by the project, possibly decreasing the amount of road widening and subsequent disturbance to surrounding vegetation and riparian conservation areas. The average maximum permanent disturbance acreages per mile with conventional construction are 2.4 acres for existing roads to be widened, 4.8 acres for new flat roads, 7.7 acres for new sloping roads, 11.6 acres for new steep roads, and 15.5 acres for new very steep roads. In contrast, the average maximum permanent disturbance per mile for helicopter construction is 0.8 acre. Based on existing road widths and widths required for conventional vehicle-based construction, 185 RCAs within the USFS portion of the Project were determined to be likely to be affected by Project implementation. The use of helicopter construction would possibly reduce this number depending on the location of towers to be constructed by helicopter.

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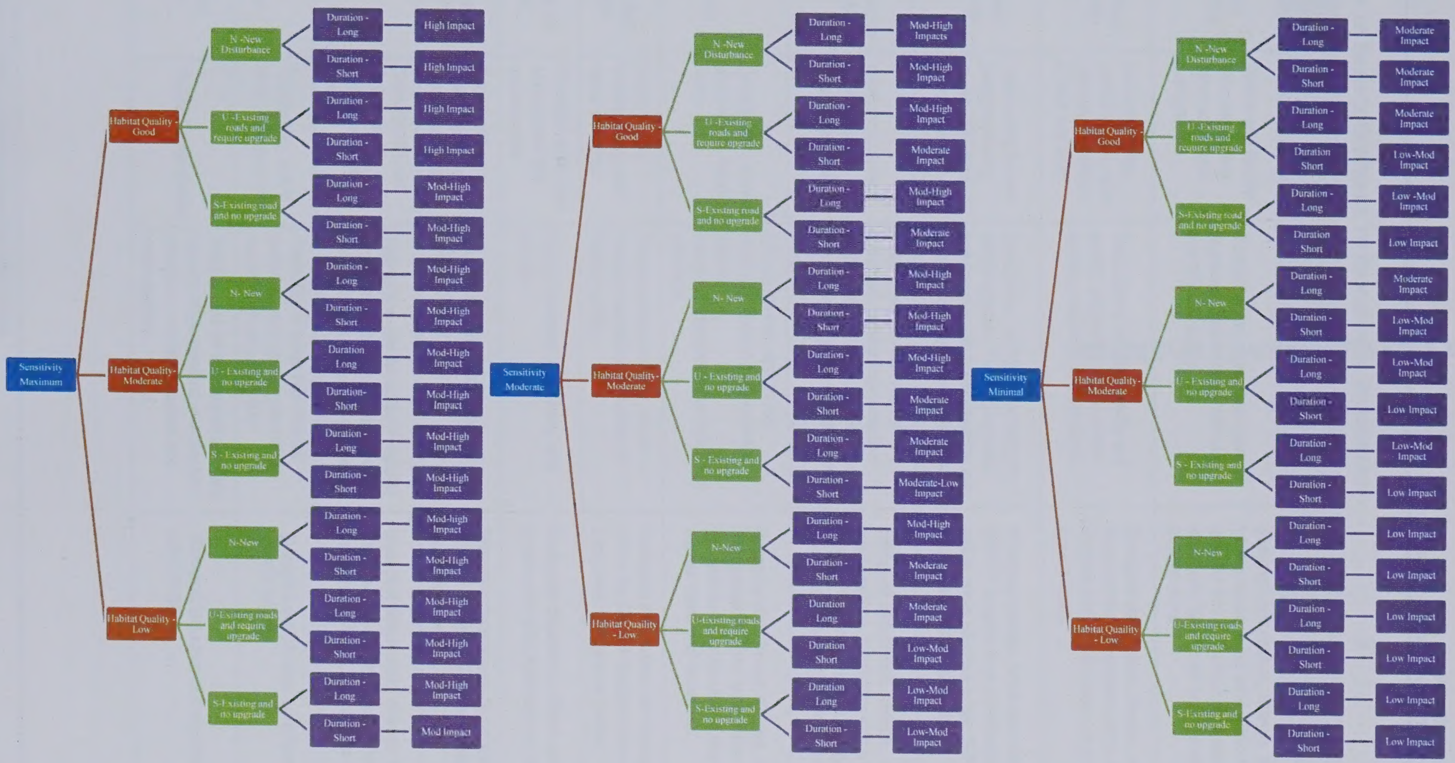
FIGURE 5-1. IMPACT MODEL USED IN ASSIGNING IMPACT LEVELS WITHIN ALTERNATE CORRIDORS OF BRRTP


Sensitivity Maximum
Habitat Quality - Good
N -New Disturbance
Duration - Long
High Impact
Duration - Short
High Impact
U -Existing roads and require upgrade
Duration - Long
High Impact
Duration - Short
High Impact
S-Existing road and no upgrade
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Mod-High Impact
Duration - Short
Mod-High Impact
Habitat Quality- Moderate
N- New
Duration - Long
Mod-High Impact
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U - Existing and no upgrade
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Habitat Quaility - Low
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U-Existing roads and require upgrade
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S-Existing and no upgrade
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TABLE 14. IMPACT SUMMARY TO BIOLOGICAL RESOURCES

Impact Type	BRRTP Attribute	Potential Impact and Biological Resource Effects	Impact Type and Longevity
Direct flora injury and/or mortality	Vehicle and human trampling during construction and maintenance	Destruction, mortality, and injury to vegetation, reduction in habitat quantity and quality	Biological disturbance, change, and fragmentation. Long-term within the BRRTP footprint from construction, access roads, and structures. Short-term in areas adjacent to the BRRTP ROW.
Indirect flora injury and/or mortality	Soil compaction, spread of non-native species, deposition of dust and mud	Reduction in habitat quantity and quality, expansion of non-native species, reduction in plant vigor	Biological disturbance, change, and fragmentation. Short-term within the BRRTP footprint from construction. Long-term for access roads.
Direct fauna injury and/or mortality	Vehicle and human trampling during construction and maintenance	Destruction, mortality, and injury to wildlife species. Fossorial species and species with limited mobility are most susceptible, nest destruction	Biological change. Short-term within the BRRTP footprint from construction, structures, and in areas adjacent to the BRRTP ROW. Long-term for access roads.
Indirect fauna injury and/or mortality	Vegetation removal, slope erosion, construction noise	Habitat quantity and quality reduction, habitat fragmentation, wildlife displacement, altered foraging/mating/movements/habitat utilization	Biological disturbance, change, and fragmentation. Short-term within the BRRTP footprint from construction. Long-term for access roads and/or vegetation maintenance.
Ground disturbance	Construction, tower foundations, access roads	Habitat quantity and quality reduction, habitat fragmentation altered foraging/mating/movements/habitat utilization	Biological disturbance, change, and fragmentation. Short-term within the BRRTP footprint from construction. Long-term from access roads and structures.
Fugitive dust generation	Construction, maintenance, and repair activities	Reduce photosynthesis, impair species respiration, reduction in habitat quality	Biological disturbance and change. Short-term within the BRRTP footprint from construction. Long-term from access roads.
Exposure to pollutants	Chemical spills from construction and maintenance	Reduce survival, population, and growth	Biological disturbance. Short-term, localized to construction and maintenance sites.
Noise, human presence	Construction, maintenance, and repair activities	Displace wildlife, disrupt breeding, migration, and foraging	Biological disturbance. Short-term within the BRRTP footprint from construction. Long-term from access roads.
Fire	Construction and maintenance equipment, human access	Habitat loss and reduction in habitat quality through the potential post-fire establishment of noxious weeds	Biological disturbance, change, fragmentation. Short-term in the construction footprint for the transmission line. Long-term for access roads.
Avian collisions	Conductors, shield wires, and guy-wires	Reduction in avian populations; waterfowl and upland game birds would be most susceptible	Biological disturbance. Long-term for the BRRTP ROW.
Increased predator habitat	Transmission towers	Raptors and corvids exploit perching opportunities, resulting in increased predation on small mammal and avian species	Biological disturbance. Long-term for the BRRTP ROW.

5.4 IMPACT ASSESSMENT MODEL METHODOLOGY

5.4.1 230 kV Transmission Line Impact Assessment

To assess the biological impact associated with new 230 KV transmission line, a GIS layer depicting the presumed ground disturbance levels (1 through 6) along the centerline of all segments were used in combination with the biological sensitivity (i.e., vegetation communities, plant species, wildlife species, habitat type), habitat quantity, habitat quality and duration. This analysis was done throughout the study corridors. Based on this map, location-specific analyses on temporary and permanent impacts could be made, and after considering the inherent sensitivity (see section 5.2) of vegetation communities, plant species, wildlife species and habitat that could be affected, a determination was made of whether high, moderate, or low impacts would result. These determinations were made consistently throughout all study segments and are noted in detail in the biology impact table for the 230 kV transmission line segments, included in the Appendices.

For the impact analysis, all vegetation communities, plant species, wildlife species, and habitat within 500 feet of each initially-proposed segment's centerline was determined to the nearest tenth of a mile, along with locations of milepost begin/end points. Within the ANF plant species, wildlife species and habitat were identified along access and spur roads. Permanent and temporary impacts to the vegetation communities (in acres) were determined based on the ground disturbance level applicable to the location evaluated. Permanent loss of habitat within the ground disturbance areas would be limited to the tower foundations and the footprint of new access roads. All other ground disturbance activities would be temporary (i.e., pulling and tensioning site).

All initial probable 230 kV component impacts were re-assessed in light of the effectiveness of GPs and Mitigation Measures to reduce potential impacts (Appendix C). As summarized in Tables 7, 8 and 9, the initial 230 kV project impacts were assessed with consideration to the sensitivity of each habitat type, plant species, wildlife species, and migration corridor, along with vegetation communities, hereafter referred to as biological sensitivity. After assigning initial ground disturbance impacts for all biological resources traversed by the 500-foot wide corridor for the line, the GPs and Mitigation Measures were considered and the degree to which those protocols and measures would reduce the initial impact was evaluated (Refer to Appendix C for the impact results).

Once impact predictions were made, a set of potential mitigation options were applied to high and moderate impact types to attempt to reduce the residual impact level to low or moderate. In some cases, as where a significant amount of long-term impact is projected upon habitats containing highly sensitive species, mitigation options may have no effect except to bring a very high potential impact down to a high potential impact. In other words, there are situations in which mitigation cannot reduce a high or moderate impact to lower levels.

5.5 MITIGATION PLANNING

LADWP would implement numerous design measures, construction and operation procedures and policies that would avoid or minimize the Project's impacts to biological resources, along with other environmentally important resources (Table 15). These measures are referred to as General Practices (GPs). In addition, LADWP would comply with all applicable conditions or measures that may be required by the federal or state resource agencies to ensure that the Project's potentially significant impacts are reduced to less than significant. In some cases, as where a significant long-term impact is projected upon habitats containing highly sensitive species, GPs may have no effect except to bring a very high potential impact down to a high potential impact. In other words, there are situations in which GPs cannot reduce a high or moderate impact to lower levels. To address this situation, specific Biological Mitigation Measures were developed to potentially reduce the impact levels to less than significant.

5.5.1 General Practices

The following tables describe proposed GPs to reduce the impact of effects that may be generated by construction of the BRRTP. These were written in collaboration with ANF staff and apply to preconstruction, construction, and post-construction aspects of the Project. The GPs were written for all resources of the Project. Because not all of these are applicable to biology, ones that do not apply to biology have not been included in the table below. The entire list can be viewed in Chapter 2 of the BRRTP Draft Environmental Impact Statement/Environmental Impact Report (DEIS/EIR) (USFS, BLM, and LADWP 2011b).

TABLE 15. GENERAL PRACTICES

	Plans
GP-1	**Plan of Development & Construction, Operation and Maintenance Plans.** In consultation with the Forest Service and BLM Authorizing Officers prior to construction, LADWP shall develop a Construction, Operation and Maintenance Plan (COM Plan) with the Forest Service and Plan of Development (POD) with BLM. These plans shall be attached to and become a part of the Special Use and Right-of-Way Authorizations. The COM Plan and POD shall include, at a minimum, road maintenance specifications, vegetation treatment and rehabilitation specifications, and conditions on maintenance and replacement of improvements. The agencies may combine the POD and COM plans into a single document for the Project.
GP-2	**Traffic Control Plan.** Prior to the start of construction, LADWP shall submit a Traffic Control Plan (TCP) to agencies with jurisdiction over public roads that would be directly affected by construction activities (where road closures or encroachments would be necessary). The Plan shall define the locations of all roads that would need to be temporarily closed due to construction activities, and also define the use of flag persons, warning signs, lights, barricades, cones, etc. for each construction closure. The plan shall include measures to avoid disruptions or delays in access for emergency service vehicles and to keep emergency service agencies informed of road closures, detours, and delays. Police departments, fire departments, ambulance services, and paramedic services shall be notified in advance of each closure by LADWP. The Plan shall also include contact information for those agencies, assign responsibility for notifying the service providers, and specify coordination procedures. Copies of the Plan shall be provided to all affected police departments, fire departments, ambulance and paramedic services.
GP-3	**Hazardous Materials/Waste Management Plan.** A project-specific hazardous materials management and hazardous waste management program will be developed prior to initiation of the project. The program will outline proper hazardous materials use, storage and disposal requirements as well as hazardous waste management procedures. The program will identify types of hazardous materials to be used during the project and the types of wastes that will be generated. All project personnel will be provided with project-specific training. This program will be developed to ensure that all hazardous materials and wastes were handled in a safe and environmentally sound manner. Hazardous wastes will be handled and disposed of according to applicable rules and regulations. Employees handling wastes will receive hazardous materials training and shall be trained in hazardous waste procedures, spill contingencies, waste minimization procedures and Treatment, Storage and Disposal Facility (TSDF) training in accordance with OSHA Hazard Communication Standard and 22 CCR. If degraded soil or groundwater is encountered during excavation (e.g., there is an obvious sheen, odor, or unnatural color to the soil or groundwater), it shall be excavated, tested, and disposed of in accordance with state hazardous waste disposal requirements. The Plan shall also include procedures detailing emergency responses to releases of hazardous materials. It will prescribe hazardous materials handling procedures for reducing the potential for a spill during construction, and will include an emergency response program to ensure quick and safe cleanup of accidental spills. All hazardous materials spills or threatened release, including petroleum products such as gasoline, diesel, and hydraulic fluid, regardless of the quantity spilled, will be immediately reported to the appropriate agency as outlined in the Plan if the spill has entered a navigable water, stream, lake, wetland, or storm drain, if the spill impacted any sensitive area including conservation areas and wildlife preserves, or if the spill caused injury to a person or threatens injury to public health. All construction personnel, including environmental monitors, will be aware of state and federal emergency response reporting guidelines.
GP-4	**Health and Safety Plan**. A Health and Safety Plan shall be prepared and implemented. The Plan shall address emergency medical services available on-site and within the project area. The Plan shall also address specific emergency response and evacuation measures.

GP-5	**Stormwater Pollution Prevention Plan.** A project-specific Construction Stormwater Pollution Prevention Plan (SWPPP) will be prepared and implemented prior to the start of construction. The SWPPP will utilize Best Management Practices (BMPs) to address the storage and handling of hazardous materials and sediment runoff during construction activities.
GP-6	**Spill Prevention, Countermeasure, and Control Plan.** LADWP will prepare or update existing Spill Prevention, Countermeasure, and Control Plan (SPCC Plan) for proposed and/or expanded switching stations if necessary or required by EPA guidelines. The plans will include engineered and operational methods for preventing, containing, and controlling potential fluid releases, and provisions for quick and safe cleanup.
GP-7	**Soil Management Plan.** A Soil Management Plan will be developed and implemented for construction of the proposed Project. The objective of the Soil Management Plan is to provide guidance for the proper handling, onsite management, and disposal of impacted soil that might be encountered during construction activities. The plan will include practices that are consistent with California Title 8, Occupational Safety and Health Administration (Cal-OSHA) regulations, as well as appropriate remediation standards that are protective of the planned use. The Plan will provide guidelines for identification of impacted soil, assessing impacted soil, soil excavation, impacted soil storage, verification sampling, and impacted soil characterization and disposal. In the event that potentially contaminated soils are encountered within the footprint of construction, soils will be tested and stockpiled. The appropriate Certified Unified Program Agency (CUPA) will determine whether further assessment is warranted.
GP-8	**Avian Protection Plan.** An Avian Protection Plan (APP) shall be developed and implemented for the construction and operation of the Project. The APP will outline measures and protocols that will be undertaken to protect avian species and is intended to protect local and migratory bird species that may occur within the Project area.
	Design
GP-9	A "dulled" metal finish shall be used on new towers or rebuilt portions of existing towers to reduce visual impacts except where otherwise dictated by visual mitigation measures..
GP-10	Nonspecular conductors shall be used to reduce visual impacts.
GP-11	Project features will be placed so as to avoid sensitive features including, but not limited to, riparian areas, water courses, and cultural sites, and/or to allow conductors to clearly span the features, within limits of standard tower design. This will minimize the amount of sensitive features disturbed and/or reduce visual contrast.
GP-12	Drainage control features will be installed, as appropriate, to minimize the amount of stormwater flow from areas of active construction. Details would be described in the SWPPP.
	Construction Vehicles/Equipment
GP-13	Only clean-burning on-road and off-road diesel engines shall be used. Where feasible, heavy-duty diesel powered construction equipment manufactured after 1996 (with federally mandated "clean" diesel engines) shall be used.
GP-14	Construction workers shall carpool to and from the construction site when possible.
GP-15	All trucks hauling soils or other loose materials shall be covered, or maintain at least two feet of freeboard (distance between the material and the top of the truck).
GP-16	Where visible soil material is carried onto adjacent public streets, the affected streets shall be cleaned daily with water sweepers.
GP-17	All vehicles and equipment operating within 100 feet of an active stream will be inspected daily to ensure they are free of any leaks of fuel, cooling, or lubricating fluids.
GP-18	All construction vehicles shall maintain a hazardous materials spill kit, which shall include absorbent materials, tarps, small storage containers or waterproof bags, and latex gloves. Field personnel shall be made aware of these kits and instructed on how to use them.
GP-19	Refueling, or addition or changing of oil and other fluids for equipment and heavy machinery shall be performed only at approved staging and construction yards. Staging and construction yards will be located on upland sites and spill containment measures will be used to minimize risk of spill or drainage into waterways. Oil and other fluids will be disposed of as required by California law. Emergency refueling, or emergency addition or changing of oil or other fluids shall not be performed within 500 feet of natural stream channels or wetlands.
GP-20	Helicopters utilized for construction will be refueled at helicopter staging areas or local airports. Procedures will include the use of drop cloths made of plastic and drip pans and trays to be placed under refilling areas to ensure that chemicals do not come into contact with the ground. Refueling areas will be located in designated areas where absorbent pads and trays are available.

GP-21	LADWP shall contact Angeles National Forest (ANF) dispatch seven days prior to helicopter use and shall provide ANF with radio frequencies being used by the aircraft, aircraft identifiers, the number of helicopters that will be used while working on National Forest System (NFS) lands at any given time, and the flight pattern of helicopters used on NFS lands. If a wildfire occurs in the Project area, upon contact from the Forest Aviation Officer, helicopters in use by LADWP shall immediately cease construction activities and not restart aerial operations until the Forest Aviation Officer provides clearance.
GP-22	The Applicant shall clear brush and dead and decaying vegetation that would pose a fire hazard from the work area prior to starting construction and/or maintenance work. The work area includes areas of construction (e.g., tower sites, switching station site) within the transmission ROW, construction laydown areas, pull sites, access roads, parking pads, and any other sites adjacent to the ROW where personnel are active or where equipment is in use or stored. Cleared vegetation shall either be removed or chipped and spread onsite in piles no higher than six inches. This will be determined in consultation with individual appropriate land management agencies.
Access Roads	
GP-23	The alignment of any new access roads or overland routes shall follow the designated area's landform contours where possible, providing that such alignment does not additionally impact resource values.
GP-24	To the extent practical, any re-grading of access roads shall be the minimum necessary to provide safe access of construction equipment, and erosion control measures.
GP-25	Construction vehicles shall use paved roads to access the construction site when available.
GP-26	The design and use of roadways or access trails within the ANF shall be coordinated with the District and Forest Supervisor's office. The ANF may specify conditions under which use of the Forest system roads and lands shall be permitted. These conditions may include restoring or blocking access at some service trails and repairing any roadway damage or erosion damage caused by construction activities or traffic. Any project-related damage to existing Forest system roads shall be repaired at LADWP's cost.
GP-27	Any construction or installation work requiring the crossing of a roadway or railway right-of-way would incorporate the use of guard poles, netting, or similar means to protect moving traffic and structures from the activity. If necessary on state highways, continuous traffic breaks would be planned and provided.
GP-28	To minimize traffic congestion and delays during construction to the extent feasible, LADWP shall restrict all necessary lane closures or obstructions on major roadways associated with Project construction activities to off-peak periods, as feasible. Lane closures should be avoided during the 6:00 a.m. to 9:00 a.m. timeframe and the 3:30 p.m. to 6:30 p.m. timeframe, or as otherwise defined within the TCPs.
GP-29	Where Project construction and/or maintenance access could close one or multiple lanes, and where significant degradations in roadway operations could result, roadway diversions should be provided to restore the travel lanes through temporary roadway restriping.
GP-30	Where Project construction and/or maintenance access could close bicycle lanes or trails, temporary diversions should be provided where feasible to provide continued access around the construction or maintenance area.
GP-31	Where Project construction and/or maintenance access could cut-off access to nearby recreation areas, and where no alternate route exists to the recreation areas, measures should be used to provide a minimum of one lane reversible access (with flagmen) through the construction/maintenance area, or work should only be conducted during off-peak hours or evening hours only.
GP-32	Any damage to local paved roadways caused by Project construction and/or maintenance should be repaired and the roadways should be restored to their previous condition.
GP-33	In areas where soils and vegetation are particularly sensitive to disturbance, existing access roads would be repaired only in areas where they are otherwise impassable or unsafe.
Construction Areas	
GP-34	Construction activities shall be limited to the designated right-of-way and approved access and work areas as identified in the ROD and POD. Any deviations from the approved areas must be cleared with the jurisdictional agency and/or landowner.
GP-35	Grading areas shall be clearly marked and no equipment or vehicles shall disturb slopes or drainages outside of the grading area.
GP-36	No paint or permanent discoloring agents will be applied to rocks or vegetation to indicate survey or construction activity limits.
GP-37	In construction areas (e.g., marshalling yards, tower sites, spur roads from existing access roads) where ground disturbance is significant or where recontouring is required, surface restoration shall occur as required by the landowner or land management agency. The method of restoration will normally consist of returning disturbed areas back to their natural contour, reseeding, installing cross drains for erosion control as necessary, placing water bars in the road as necessary, and filling ditches.

GP-38	Soil excavated from construction activities shall not be left at work areas where the slopes exceed 10 percent or where the work area is within 100 feet of a natural stream or waterbody (receiving water). In these situations, loose soil shall be used elsewhere within the immediate area or stockpiled at the staging area. Stockpiled soil shall be managed as required by the SWPPP. No stockpiling or spreading of soil or other materials shall occur within stream channels.
GP-39	During grading or excavation work for the Project, the contractor shall observe the exposed soil for visual evidence of contamination. If visual contamination indicators are observed during construction, the contractor shall stop work until the material is properly characterized and appropriate measures are taken to protect human health and the environment. The contractor shall document the exact location of the contamination and shall immediately notify a designated Environmental Monitor and propose actions for addressing the contamination in accordance with the Soil Management Plan.
GP-40	Existing watering facilities (e.g., tanks, developed springs, water lines, wells, etc.) will be repaired or replaced, if they are damaged or destroyed by construction activities, to their pre-disturbed condition as required by the landowner or land management agency.
GP-41	Allow natural vegetation to reoccur on temporarily disturbed areas following the completion of construction.
GP-42	Weed control measures on non-federal lands shall be implemented as determined in consultation with CDFG and the Counties of Los Angeles and Kern Agricultural Commissions.
GP-43	Every effort will be made to minimize vegetation removal and permanent loss at construction sites. Native vegetation will be flagged for protection or stockpiled for recontouring use at the discretion of the Biological Monitor and the Construction Supervisor.
GP-44	In construction areas where recontouring is not required, vegetation will be left in place wherever possible and the original contour will be maintained to avoid excessive root damage and allow for resprouting. Disturbance will be limited to overland driving where feasible to minimize changes in the original contours.
GP-45	Use of heavy equipment within a flowing channel will be avoided if possible; however, should it be necessary, the Environmental Monitor will be notified prior to initiation of construction activities to allow adequate time for site visits and surveys, if necessary.
GP-46	Asphalt or cement equipment will not be rinsed in, nor excess products deposited into any stream or other waterway. Asphalt or concrete effluent will not be allowed to enter into stream or RCA. Effluent will be removed from standing water and prevented from entering a waterway.
GP-47	Fill material, including brush, loose soils, and other similar debris will not be deposited within a stream channel or on a stream bank.
Surveys/Monitoring	
GP-48	Biological Monitor. For areas identified as environmentally sensitive, such as streams, wetlands, riparian areas, and other environmentally sensitive areas, a biological monitor shall be present during ground disturbing construction activities. The qualified biologist shall conduct monitoring for any area subject to disturbance from construction activities that may impact biological resources. The biological monitor's duties include minimizing impacts to special-status species, native vegetation, wildlife habitat, and unique resources, as well as to identify potential issues or impacts to biological resources and report those to the authorized biologist. Where appropriate, the monitor will flag the boundaries of biologically sensitive areas and monitor any construction activities in these areas to ensure that ground disturbance activities and impacts occur within designated limits.
GP-49	Worker Environmental Awareness Program. A Worker Environmental Awareness Program (WEAP) will be implemented to educate all construction personnel of the area's environmental conditions and the environmental protection measures that must be adhered to. An environmental training program will be established to communicate environmental concerns and appropriate work practices, including spill prevention, emergency response measures, protection of biological and cultural resources, and proper Best Management Practice (BMP) implementation, to all construction and maintenance personnel.
Coordination/Permits	
GP-50	Prior to construction, LADWP shall consult with all federal, state, and local agencies, including local agency consortiums, having jurisdiction over lands affected by the proposed Project's ROW and ancillary facilities to ensure that no permanent restrictions or preclusions of their land management practices occur.
GP-51	Construction activities shall be designed to minimize work on or use of local streets. In the event that local streets must be used for more than normal traffic purposes, an encroachment permit or similar authorization shall be obtained from the County (or other agency, as applicable). Any work requiring an encroachment permit shall include preparation of a traffic control plan or other management plan to minimize effects on local streets. Any damage to local streets will be repaired, and the street system will be restored.

GP-52	Consistent with Los Angeles County Code (Section 12.08.440), no construction activities shall occur in a residential area between 7:00 p.m. and 7:00 a.m. on weekdays and Saturdays, or at any time on Sundays or holidays. In the event that construction needs to occur outside the specified hours, a variance shall be obtained beforehand.
GP-53	Incorporate riparian area avoidance and permit measures. The following actions and all permit conditions detailed within the Nationwide 12 permit and RWQCB 401 water quality certification (subject to separate approval) would be implemented by the construction manager and environmental compliance monitor(s). Before construction, qualified resource specialists would stake and flag or fence exclusion zones around all identified riparian woodlands. Such exclusion zones would include a 10-foot buffer to preclude sediment intrusion into the riparian areas. Earth-moving activities would be restricted from these zones, although essential vehicle operation and foot travel would be permitted on existing roads, bridges, and crossings. All other construction activities, vehicle operation, material and equipment storage, and other surface-disturbing activities would be prohibited within the exclusion zone. In areas where riparian habitats are unavoidable, the construction manager in consultation with the lead environmental compliance inspector would narrow the width of the centerline to the maximum extent allowable. New spur roads and existing access road improvements would be constructed and implemented using methodology that preserves existing hydrology. Tower pad clearance would be minimized to the maximum extent allowable. All temporarily disturbed riparian areas that would not be utilized for future routine operation and maintenance activities would be restored to ensure no net loss of habitat functions and values. Following construction activities, the areas would be restored as soon as practicable.
GP-54	Construction crews will avoid impacting the streambeds and banks of any streams along the route to the extent feasible. When construction or maintenance work affects the bed, bank or margins of a stream under CDFG jurisdiction, LADWP will notify CDFG as required under Fish and Game Code Section 1602, which may include securing a Streambed Alteration Agreement.
GP-55	Local emergency service providers shall be coordinated with to ensure that construction activity and any associated lane closures or traffic impacts will not significantly affect emergency response vehicles.
GP-56	LADWP would obtain appropriate Tree Removal Permits when necessary from the appropriate government agencies. In accordance with the obtained permits, LADWP shall avoid or minimize impacts to protected trees.
GP-57	LADWP shall obtain permits/approvals from any affected railway operators to ensure construction activities comply with each company's safety requirements and to avoid disruption to or congestion of rail traffic.
GP-58	LADWP shall coordinate with the City of Santa Clarita at least 30 days prior to construction in the service territory to reduce the potential interruption of bus transit services.
GP-59	All residences adjacent to the project area shall be notified at least seven days in advance of local construction of the construction schedule and the type and expected duration of local impacts. The notice shall also include a phone number for construction noise questions.

5.5.2 Mitigation Measures

Mitigation measures, where relevant and applicable with federal, state, and regional policies, were identified for potential impacts to sensitive biological resources. Due to the high sensitivity of certain rare habitats and resident listed species, the occurrence of these resources within the study corridors and the potential effect of the Project on these resources are presented below for all project components.

5.5.3 Residual Impact Level

Residual impact levels are impacts that remained even after selective mitigation procedures were applied. For all types of impacts, it was determined that through incorporation of the GPs and Mitigation Measures, the initial impact could be reduced to a residual impact level of moderate (M), low (L), or no identifiable effect (NI). For this Project, most residual impacts can be reduced to low levels.

Information on the effectiveness of the various GPs and Mitigation Measures is provided in the results section below, for the Project's impacts to biological resources.

6.0 PROPOSED PROJECT IMPACTS AND MITIGATION MEASURES

Major issues pertaining to biological resources include impacts of the proposed transmission line on native ecosystems, potential indirect impacts to water by construction activities, impacts on special-status species that may exist along the transmission lines, and potential impacts to birds protected by the Migratory Bird Treaty Act.

This section identifies potential biological resources impacts that may occur as a result of construction and operation of the proposed Project. Impacts identified below are subdivided for ease of references into the following categories: Vegetation, Wildlife, and Special-Status Species.

GPs and Mitigation Measures, where relevant and applicable with federal, state, and regional policies, were identified for potential impacts to sensitive biological resources. Due to the high sensitivity of certain rare habitats and resident listed species, the occurrence of these resources within the study corridors and the potential effect of the Project on these resources are presented below for all Project components.

For each potential impact associated with BRRTP, a level of significance is determined and reported in the impact statement. Conclusions of significance are defined as follows: significant impact, potentially significant impact, less than significant, or no impact. If the mitigation measures would not diminish significant or potentially significant impacts to a less-than-significant level, the impacts are classified as "significant unavoidable impacts." In this section, BIO refers to Biological Resources.

Because many of the impact types are relevant to all components of the Project, impacts common to the Project are described below, followed by Mitigation Measures applicable to each impact. The effects of developing a new 230 kV transmission line, new 230 kV circuit, reconductoring, new switching station, and expansion of switching station as proposed, on vegetation communities and sensitive species are described below.

6.1 VEGETATION COMMUNITY IMPACTS

Vegetation resources could be directly and indirectly affected by construction, operation and maintenance activities. Various phases of construction would occur simultaneously at different locations throughout the construction process. This would require several construction crews operating in these different locations.

Construction impacts to vegetation communities may occur in a variety of ways, including the direct removal of plants during the course of construction. Clearing and grading associated with the placement of towers, construction of helicopter staging areas, and the construction and widening of access and spur roads may also result in the alteration of soil conditions, including the loss of native seed banks and changes to the topography and drainage of a site such that the capability of the habitat to support native vegetation is impaired. Construction may also result in the creation of conditions that are favorable for the invasion of weedy exotic species that prevent the establishment of desirable vegetation and may adversely affect wildlife. Desert ecosystems in the Antelope Valley and some plant communities within the San Gabriel Mountains are especially susceptible to ground disturbance and may take decades to recover, if at all.

Along with the vegetation community impacts caused by construction, there are potential effects that could be caused by operation and maintenance of the completed Project. First among these is the spread of exotic plant species along the transmission line access roads or tower pads by pickup trucks or security. While these vehicles are unlikely to be engaging in soil disturbance, they may pick up exotic seeds and carry them along the linear Project area, spreading seeds throughout the area. Additionally, native plants that are allowed to grow into the roadway may be impacted by collision with passing vehicles. Similarly, foot traffic associated with operation and maintenance needs may result in the trampling of vegetation. Patches of vegetation, specifically those directly beneath towers, will be required to be kept clear or at levels low enough to reduce fire risk over the course of the transmission line's life. Vegetation removal in this circumstance will result in the removal of native species, but will also, by extension, result in the removal of non-native species as well to meet fire safety requirements.

BIO-1 Vegetation Impact: Construction and operation of the proposed Project would result in the temporary and permanent loss of vegetation communities.

Implementation of the proposed Project would require construction to occur within a broad array of habitat types. While LADWP intends to avoid special-status plant communities to the maximum extent possible and would flag resources for avoidance, construction of the proposed Project would still result in disturbance to a variety of plant communities.

Project impacts are considered permanent if they involve the conversion of land to a new use, such as with the construction of new roads or the footings of towers. Temporary project impacts are those effects that do not result in a permanent land use conversion. Temporary effects to vegetation communities or other ground disturbance activities restricted solely to the construction phase, such as grading roads and clearing vegetation within staging and pulling areas, are considered temporary provided that native vegetation is not replaced with infrastructure or the area is not maintained free of vegetation, and that restoration is deemed feasible prior to project implementation.

Direct impacts to native vegetation communities would occur as a result of the removal of vegetation during construction activities. These ground-disturbing construction activities would include clearing and grading for tower pad preparation, tower removal sites, pulling and tensioning sites, helicopter staging areas, and construction, grading, and widening of new spur roads and existing access roads. Table 16 presents the approximate temporary and permanent impacts to vegetation communities that would occur from implementation of the proposed Project. It is important to note that acreages presented in these tables were determined using only GIS information. However, the GIS method was necessary to spatially map impact areas to determine vegetation communities affected by the Project. In total, the proposed Project would disturb a minimum of approximately 136 acres of vegetation identified as rare and worthy of consideration by the CDFG (271 acres of non-rare vegetation) and would temporarily impact a minimum of approximately 172 acres of rare vegetation (334 acres of non-rare vegetation). Appendix B includes detailed vegetation maps of the entire proposed Project and alternative transmission line routes.

Indirect impacts to native vegetation communities could include alterations in existing topography and hydrology regimes, the accumulation of fugitive dust, disruptions to native seed banks from ground disturbance, and the colonization of non-native, invasive plant species.

Ongoing operations and maintenance impacts would occur during routine inspection and maintenance of the proposed Project facilities or as a result of facilitated public access. These impacts would include trampling or crushing of native vegetation by vehicular or foot traffic, alterations in topography and hydrology, increased erosion and sedimentation, and the introduction of non-native, invasive plants due to increased human presence.

Within the ANF Segments (Segment G, H1, H2 GHV, portions of I and D), minimum disturbance to vegetation totals approximately 166 acres, and maximum impacts to vegetation total approximately 187 acres. Specific impacts to each major plant community are discussed below. The numbers below apply only to the Project Alternatives, and do not include the reconductoring or new circuit, which have large amounts of overlap with the Alternatives and would create an unrealistic summary of effects if combined together.

Mojave Creosote Bush Scrub, Mojavean Mixed Scrub, Mojave Wash Scrub, Rabbitbrush Scrub, and Riversidian Sage Scrub Habitats

The above listed vegetation communities occur in the northern portion of the Project area south into the ANF. Direct and indirect effects to vegetation communities and potentially-occurring special-status plant species are possible as a result of the implementation of this Project. A total of 2,784 acres of Mojave Creosote Bush Scrub, 78 acres of Mojave Wash Scrub, 148 acres of Rabbitbrush Scrub, and 1,310 acres of Riversidian Sage Scrub occurs within the Project area. Approximate maximum temporary and permanent disturbance acreages relative to total availability within the Project Area are as follows: 299 acres of temporary disturbance (11%) and 88 acres of permanent disturbance (3%) to Mojave Creosote Bush Scrub, 8 acres of temporary disturbance (10%) and 1 acres of permanent disturbance (1%) to Mojave Wash Scrub, 16 acres of temporary disturbance (11%) and 8 acres of permanent disturbance (5%) to Rabbitbrush Scrub, and 187 acres of temporary disturbance (14%) and 65 acres of permanent disturbance (5%) to Riversidian Sage Scrub. In addition to being somewhat common within the proposed Project, these habitats are regionally common: the West Mojave Plan (WMP), which covers nearly 9,400,000 acres and includes the entire Northern Region of the proposed Project, lists 5,683,646 acres of Mojave creosote scrub habitat, 114,982 acres of big sagebrush scrub habitat, and 7,842 acres of rabbitbrush scrub habitat as occurring within the WMP planning area (BLM 2005). Furthermore, much of these habitats are less likely to be developed as they are under BLM, NPS, USFS, or Department of Defense (DOD) ownership. However, 32 percent of the lands within the WMP planning area are privately owned and one percent is owned by the State of California. A portion of these areas is likely to be developed as ongoing urbanization in the planning area continues. Recently burned areas are in an early successional state, and may currently support numerous species of ephemeral fire-following native wildflowers. A portion of these areas is likely to be developed as ongoing urbanization in the planning area continues. Recently burned areas are in an early successional state, and may currently support numerous species of ephemeral fire-following native wildflowers.

Chamise Chaparral, Southern Mixed Chaparral, Interior Live Oak Chaparral, and Scrub Oak Chaparral Habitats

Direct and indirect effects to vegetation communities and potentially-occurring special-status plant species are possible as a result of the implementation of this Project. A total of 1,107 acres of Chamise Chaparral, 1,049 acres of Southern Mixed Chaparral, 54 acres of Interior Live Oak Chaparral, and 340 acres of Scrub Oak Chaparral is present within the Project Area. Approximate maximum temporary and permanent disturbance acreages relative to total availability within the Project Area are as follows: 136 acres of temporary disturbance (12%) and 40 acres of permanent disturbance (4%) to Chamise Chaparral, 133 acres of temporary disturbance (13%) and 51 acres of permanent disturbance (5%) to Southern Mixed Chaparral, 6 acres of temporary disturbance (10%) and 2 acres of permanent disturbance (4%) to Interior Live Oak Chaparral, and 40 acres of temporary disturbance (12%) and 18 acres of permanent disturbance (5%) to Scrub Oak Chaparral. These four chaparral habitat types are present in the southern portion of the Project Area, south of the Antelope Valley. Approximately 40,424 acres of chamise chaparral habitat, 240,230 acres of mixed chaparral habitat, and 36,613 acres of scrub oak chaparral habitat occur within the entire Angeles National Forest. Thus, the approximate loss of these habitats relative to their overall availability in the Project area ranges from four percent for interior live oak chaparral to five percent for southern mixed and scrub oak chaparral. Much of this habitat in the region is not likely to be developed, as it is under State or federal ownership. As described above, while they are relatively common, the loss of these habitats can result in the spread of noxious or invasive weeds or alter the fire regime of a given area, or they have the potential to support rare species of plants and wildlife. Additionally, in light of the Buckweed Fire, impacts to remaining unburned chaparral-based vegetation types from Project activities may be greater in magnitude, as these communities will be limited and/or recovering.

California Annual Grassland, Agricultural Land, and Disturbed/Developed

These three types of disturbed habitats will be affected by Project implementation. A total of 1,290 acres of California Annual Grassland, 878 acres of Agricultural Land, and 657 acres of Disturbed/Developed land is present within the Project Area. Approximate maximum temporary and permanent disturbance acreages relative to total availability within the Project Area are as follows: 139 acres of temporary disturbance (11%) and 45 acres of permanent disturbance (3%) to California Annual Grassland, 95 acres of temporary disturbance (11%) and 15 acres of permanent disturbance (2%) to Agricultural Land, and 70 acres of temporary disturbance (11%) and 23 acres of permanent disturbance (4%) to Disturbed/Development lands. These three habitat types are found throughout the Project Area, and they are only expected to experience between 2 – 4% permanent disturbance relative to known availability within the Project Area. Impacts of this magnitude to ruderal grassland, non-native woodland, agricultural, and barren/developed areas do not typically result in adverse effects to biological resources, as they are not rare. These habitats are common within the local and regional landscape, and the relative quality of these habitat types is low due to on-going anthropogenic disturbances, including the introduction of intensive agricultural activities and road construction. Many grasslands in the state and within the proposed Project have been subjected to ground disturbance and are heavily colonized by exotic grasses. Such disturbed grasslands provide only marginal habitat for most native plants. However, other less disturbed grassland areas appearing to be dominated by exotic grasses for most of the year may be dominated by numerous species of native annual wildflowers in the spring (Sawyer and Keeler-Wolf 1995). These "wildflower fields" (Holland 1986), which are abundant within the proposed Project in the Antelope Valley, are often difficult to distinguish from disturbed, low diversity grasslands in surveys conducted outside of the spring blooming period. Both types of annual grassland communities are important foraging areas for raptors and other wildlife. Furthermore, the clearance of these areas would require restoration after construction to ensure that type changes from annual grassland to ruderal or barren habitat does not occur, to ensure storm water runoff does not lead to off-site sediment transport, and to reduce or limit the effects of wildfire on adjacent communities.

Joshua Tree Woodland

A total of 602 acres of Joshua Tree Woodland is present within the Project Area. Approximate maximum temporary disturbance to this habitat would be 65 acres (11% of total) and approximate maximum permanent disturbance would be 19 acres (3% of total). This habitat type is known to be present within the northern portion of the Project on Segments A – E. Because the estimated permanent disturbance is only 3% of what is known to be within the Project Area, loss of this habitat relative to regional abundance outside the Project is likely negligible. Joshua tree habitats support unique assemblages of plant and wildlife species, and despite the minimal acreage impacted by this Project, vast acreages of these habitats have been lost over the last several decades due to urbanization and agricultural activities in the Antelope Valley. In general, other desert plant communities lack vertical structure and shade. However, these habitats provide the important structural characteristics for mammals and avian species. Additionally, unlike herbaceous or shrub-dominated habitats, arid woodlands are extremely slow developing, with mature juniper and pinyon woodlands requiring as much as 150 years to reach full maturity (Wangler and Minnich 1996). Due to the unique floristic composition and structure of these communities, and due to historic and on-going losses, several local plans, ordinances, and policies have designated Joshua tree woodland and juniper woodland habitats as special status. The overall approach to mitigation of impacts to special-status habitats is to avoid impacts through redesign of tower locations, spur roads, pulling locations, and staging areas, particularly with regards to habitat types containing large tree species, where individual trees or clumps of trees can be avoided.

Southern Coast Live Oak Riparian Forest, Southern Cottonwood Willow Riparian Forest, Southern Riparian Scrub, Southern Willow Scrub, Southern Sycamore Alder Riparian Woodland, Alluvial Wash

These five habitat types will be affected by Project implementation. A total of 27 acres of Southern Coast Live Oak Riparian Forest, 8 acres of Southern Cottonwood Willow Riparian Forest, 65 acres of Southern

Riparian Scrub, 13 acres of Southern Willow Scrub, and 45 acres of Southern Sycamore Alder Riparian Woodland land is present within the Project Area. Approximate maximum temporary and permanent disturbance acreages relative to total availability within the Project Area are as follows: 4 acres of temporary disturbance (15%) and 1 acre of permanent disturbance (4%) to Southern Coast Live Oak Riparian Forest, 1 acre of temporary disturbance (13%) and less than 0.5 acre of permanent disturbance (< 6%) to Southern Cottonwood Willow Riparian Forest, 7 acres of temporary disturbance (11%) and 3 acres of permanent disturbance (5%) to Southern Riparian Scrub, 1 acre of temporary disturbance (8%) and less than 0.5 acre of permanent disturbance (< 5%) to Southern Willow Scrub, and 5 acres of temporary disturbance (11%) and 2 acres of permanent disturbance (4%) to Southern Sycamore Alder Riparian Woodland. Riparian habitats support a number of sensitive species and are particularly susceptible to human impacts such as pollutants, hazardous material spills, increased sedimentation, non-native weed species, and other effects that can degrade water quality and/or the general habitat quality. Riparian habitat can also serve as an important linkage between habitat on the ANF and on private lands and between different habitat types. The ANF has completed various projects to improve the quality of riparian habitat by removing exotic species, some of which are within the general Project vicinity. Enforcement of buffers around RCAs for construction projects, including BRRTP, helps to reduce the amount of disturbance to riparian habitat. Estimates of permanent disturbance to these habitat types as a result of this Project range from 4 to 6%.

Annosus Root Disease

During the clearing and grading of existing roads, helicopter landing pads, tower locations, staging areas and other locations LADWP would cut or remove native trees. This can expose otherwise healthy trees in adjacent areas to Annosus root disease, or fomes annosus (*Heterobasidion annosum*), a fungus that attacks a wide range of woody plants causing a decay of the roots and butt and the death of sapwood and cambium. All conifer species and many hardwood species in California are susceptible to the fungus. The fungus can become established in freshly cut tree stumps through airborne spores and then spread to remaining trees nearby through the conifer's root systems. The disease spreads outward, killing trees in a circular pattern until they reach barriers, such as openings or non-susceptible plants. Once fomes annosus is established in an area, it is easily spread from freshly cut stumps to adjacent trees (USFS 2005). The fungus can remain alive for as long as 50 years in the roots and stumps. Because the disease results in mortality of trees, it can create hazard trees, deplete vegetative cover, and result in adverse effects to wild land ecology (USFS 2005).

Regional direction states the best form of management for this root disease is prevention, including treatment of freshly-cut conifer stumps with registered products such as Sporax. The USFS Manual (FSM 2303.14 R5 supplement 2300-92-1), USFS Handbooks (FSH 2109.14 and FSH 3409.11-94-1), and the ANF Management Plan (Vegetation Management Standard S5) require treatment of all conifer stumps in recreation areas and provide direction and guidance for its use. The application of Sporax to freshly cut stumps significantly reduces the risk of fomes annosus infestation to adjacent conifers.

To reduce the effects of fomes annosus on native trees LADWP would implement Mitigation Measure B-1c (Treat cut tree stumps with Sporax). The active ingredient in Sporax is borax, a naturally occurring mineral made of sodium, boron, oxygen, and water. Borax is virtually nontoxic to humans, birds, fish, and to aquatic invertebrate animals. Sporax would be applied in localized treatments, has low toxicity, and would not be used during rain events. Based on this, use of Sporax to prevent the spread of fomes annosus would not result in adverse impacts to plants or wildlife.

BIO-1 Mitigation Measure: Provide restoration/compensation for impacted sensitive vegetation communities.

1a. The intent of this mitigation measure is to require LADWP to restore disturbed sites to pre-construction conditions or the desired future conditions per the Angeles National Forest (ANF) Land Management Plan (LMP). Before construction LADWP shall have a qualified biologist, where concurrence on the biologist has been provided by the USFS and BLM, document the community type and acreage of vegetation that would be subject to Project disturbance. Impacts to all oaks and native trees will be documented by identifying the species, number, location, and diameter at breast height (DBH). On non-federal lands, all protection and replacement measures shall be consistent with applicable local jurisdiction requirements, such as the Los Angeles County Oak Tree Ordinance. Tree removal shall not be permitted until replacement trees have been planted or transplanting sites are approved.

1) For NFS and BLM lands, the USFS and BLM shall prepare a Habitat Restoration and Revegetation Plan, in discussion with LADWP, for the Project, which shall include plans for restoration, enhancement/re-vegetation and/or mitigation banking. For non-federal lands, LADWP shall prepare the Habitat Restoration and Revegetation Plan. Both plans shall include at minimum: (a) the location of the mitigation site (off-site mitigation may be required); (b) locations and details for topsoil storage; (c) the plant species to be used; (d) seed and cutting collecting guidelines; (d) a schematic depicting the mitigation area; (e) time of year that the planting will occur and the methodology of the planting; (f) a description of the irrigation methodology for container, bare-root or other planting needing irrigation; (g) measures to control exotic vegetation on site; (h) success criteria; (i) a detailed monitoring program;(j) locations and impacts to all oaks and native trees (over 3 inches DBH); (k) locations of temporary or permanent gates, barricades, law enforcement patrolling, or other means to control unauthorized vehicle access on access and spur roads as deemed necessary by the USFS and BLM (NFS and BLM lands only).
2) LADWP shall utilize a USFS/BLM approved locally collected seed mix, locally collected cuttings, bare-root stock, etc. to revegetate areas disturbed by construction activities. All habitats dominated by non-native species before Project disturbance shall be revegetated using appropriate native species. USFS/ BLM approval is required for seeding on NFS/BLM land. The seed mix shall consist of native, locally occurring species collected from local seed sources. Cuttings and bare-root stock shall be of local origin. Restoration shall include the revegetation of stripped or exposed work sites and/or areas to be mitigated with vegetation native to the area. No commercially purchased seeds, stock, etc. will be accepted without the approval of the USFS and BLM on NFS/BLM lands, and seeds must be certified to be free of noxious weeds. Revegetation shall include ground cover, grass, shrub, and tree species to match disturbed areas to surrounding conditions and to restore or improve wildlife habitat quality to pre-Project or higher levels. The Habitat Restoration and Revegetation Plan shall also include a monitoring element. Post seeding and planting monitoring reporting will be yearly from years one to five and every other year from years six to ten or until the success criteria are met. LADWP shall restore temporarily disturbed areas, including existing tower locations that are to be removed by the Project, to pre-construction conditions or the desired future conditions per the ANF LMP. If the survival and cover requirements have not been met, LADWP is responsible for replacement planting to achieve these requirements. Replacement plants shall be monitored with the same survival and growth requirements as previously mentioned.
3) On NFS land, the USFS/LADWP will conduct a preconstruction evaluation of the probable impacts to all oaks and native trees in all construction-related disturbance areas. This evaluation shall be incorporated into the Habitat Restoration Plan and shall include the species and number of individuals, their DBH, location, and potential impact type. Construction within the driplines of all native trees and oak trees/shrubs, and incidental trimming or damage to trees along the proposed access/spur routes, shall not occur until the trees are evaluated by a USFS botanist or qualified arborist. This person shall identify appropriate measures to minimize tree loss, such as the placement of fence around the dripline, padding vehicles, minimizing soil removal or adding spoil around driplines, and the placement of matting under the existing dripline during construction activities. On the ANF, if a tree must have any construction-related activities such as equipment or soil staging within the drip zone, root pruning, or excessive branch pruning (greater than 25% in one year), then the tree must be monitored for five years for tree mortality. If any of

these identified trees dies during the monitoring period, then the tree must be replaced at the rate appropriate to the DBH.

4) The replacement ratios (using rooted plants in liners or direct planting of acorns [for oaks]) for native trees or any oaks that are to be removed on the ANF shall be as follows: trees from 1 to 5 inches DBH shall be replaced at 3:1; trees from 5 to 12 inches shall be replaced at 5:1; trees from 12 to 24 inches shall be replaced at 10:1; trees from 24 to 36 inches shall be replaced at 15:1; and all oaks greater than 36 inches shall be replanted at a ratio of 20:1. The replacement ratio for damaged trees shall be 2:1 for trees with DBH less than 12 inches and a 5:1 ratio for trees with DBH greater than 12 inches. The DBHs for scrub oaks will be measured following California Department of Fish and Game (CDFG) guidelines. On the ANF. any oak or native tree that must be removed or killed as a result of construction or other Project-related activities shall be replaced in kind or mitigated (off-site) at a comparable value. Compliance shall be evaluated annually for years one to five and bi-annually for years six to ten (years after tree planting). Trees shall be planted at locations acceptable to the landowner or managing agency. All planting locations, procedures, and results shall be evaluated by a qualified arborist and USFS botanist. On non-federal lands, all protection and replacement measures shall be consistent with applicable local jurisdiction requirements, such as the Los Angeles County Oak Tree Ordinance.
5) Permanent impacts on federal lands shall be determined by the appropriate federal manager (USFS and BLM) at the ratios stated below (Table BIO-MM-1) or at a comparable value. On NFS and BLM lands, impacts will be considered permanent if the trees are not likely to recover by ten years post-disturbance. Where on-site restoration is planned for mitigation of temporary impacts to vegetation communities, LADWP shall identify a Habitat Restoration Specialist, where concurrence has been provided by the USFS, to implement the method of restoration outlined by the USFS/BLM in the Habitat Restoration Plan.
6) On USFS/BLM lands, the creation or restoration of habitat shall be monitored after mitigation site construction to assess progress and identify potential problems with the restoration site. This will be monitored on USFS/BLM lands until the success criteria are met or annually for years one to five, and bi-annually for years six to ten. Remediation activities (e.g., additional planting, removal of non-native invasive species, or erosion control) shall be taken during the ten-year period if necessary to ensure the success of the restoration effort. If the mitigation fails to meet the established performance criteria after the ten-year maintenance and monitoring period, monitoring and remedial activities shall extend beyond the ten-year period until the criteria are met or unless otherwise specified by the USFS/BLM (as appropriate). If a fire occurs in a revegetation area within the ten-year monitoring period, LADWP shall be responsible for a one-time replacement. If a second fire occurs, no replanting is required, unless the fire is caused by LADWP activity. Off-site mitigation for NFS/BLM and non-NFS/BLM lands may be required if mitigation rates exceed what can be achieved on NFS/BLM land. This may be in the form of funding for land purchase for inclusion into the Angeles National Forest, mitigation banking, removing existing structures, or comparable restoration efforts.

1b. During and after construction, USFS/BLM-identified potential or existing entrances to Project-related disturbed areas such as access/spur roads, pull sites, staging areas, fly yards, landing zones, etc. on NFS/BLM lands shall be gated, blockaded and/or concealed in some manner and maintained to prevent the unauthorized use by the general public. Signs prohibiting unauthorized use of these disturbance areas shall be posted on these barricades if deemed necessary by the USFS/BLM. If barricades are being compromised, law enforcement patrolling may also be implemented to control unauthorized access onto Project disturbance areas.

1c. Treat cut tree stumps with Sporax. All stumps of trees (conifers and hardwoods) resulting from activities associated with construction of the Project shall be treated with Sporax according to product directions to prevent the spread of annosus root disease. Only licensed applicators shall apply Sporax. Sporax shall not be used during rain events unless otherwise approved by the USFS.

TABLE 16. SUMMARY OF ESTIMATED IMPACTS TO VEGETATION COMMUNITIES ON FEDERAL LANDS

Vegetation Communities	Jurisdiction	Permanent Impacts (acres)			Temporary Impact (acres)			Total Estimated Mitigation (acres)
		Estimated Impact	Ratio	Estimated Off-site Mitigation	Estimated Impact	Ratio	Estimated On-site Restoration	
Alternative 1								
Chamise Chaparral	USFS	16.73	3:1	50.19	56.06	1:1	56.06	106.25
Mojave Creosote Bush Scrub	BLM	2.68	1:1	2.68	21.81	1:1	21.81	24.49
Mojave Wash Scrub	BLM	0.25	1:1	0.25	2.05	1:1	2.05	2.30
Riversidian Sage Scrub	USFS	3.06	5:1	15.3	10.48	2:1	20.96	36.26
Southern Coast Live Oak Riparian Forest	USFS	0.05	5:1	0.25	0.38	2:1	0.76	1.01
Southern Cottonwood Willow Riparian Forest	USFS	0.42	5:1	2.1	0.86	2:1	1.72	3.82
Southern Mixed Chaparral	USFS	14.13	3:1	42.39	45.81	1:1	45.81	88.20
Southern Sycamore Alder Riparian Woodland	USFS	0.13	5:1	0.65	0.25	2:1	0.5	1.15
Southern Willow Scrub	USFS	0.32	3:1	0.96	1.30	2:1	2.6	3.56
Alternative 2								
Chamise Chaparral	USFS	10.11	3:1	30.33	39.38	1:1	39.38	69.71
Disturbed/developed	USFS	7.8	1:1	7.8	24.8	1:1	24.8	32.6
Mojave Creosote Bush Scrub	BLM	2.69	1:1	2.69	21.82	1:1	21.82	24.51
Mojave Wash Scrub	BLM	0.25	1:1	0.25	2.06	1:1	2.06	2.31
Riversidian Sage Scrub	USFS	1.84	5:1	9.2	8.85	2:1	17.7	26.9
Southern Coast Live Oak Riparian Forest	USFS	0.69	5:1	3.45	3.39	2:1	6.78	10.23
Southern Mixed Chaparral	USFS	3.24	3:1	9.72	8.77	1:1	8.77	18.49
Southern Riparian Scrub	USFS	0.33	3:1	0.99	0.66	1:1	0.66	1.65
Southern Sycamore Alder Riparian Woodland	USFS	0.87	5:1	4.35	2.2	2:1	4.4	8.75
Alternative 2a								
Chamise Chaparral	USFS	10.11	3:1	30.33	39.38	1:1	39.38	69.71
Disturbed/developed	USFS	3.24	1:1	3.24	12.72	1:1	12.72	15.96
Interior Live Oak Chaparral	USFS	2.06	5:1	10.3	5.60	2:1	11.2	21.5
Mojave Creosote Bush Scrub	BLM	2.68	1:1	2.68	21.81	1:1	21.81	24.49
Mojave Wash Scrub	BLM	0.25	1:1	0.25	2.05	1:1	2.05	2.3
Riversidian Sage Scrub	USFS	1.84	5:1	9.2	8.85	2:1	17.7	26.9
Scrub Oak Chaparral	USFS	1.46	5:1	7.3	3.19	2:1	6.38	13.68
Southern Coast Live Oak Riparian Forest	USFS	0.69	5:1	3.45	3.40	2:1	6.8	10.25
Southern Mixed Chaparral	USFS	9.03	3:1	27.09	27.88	1:1	27.88	54.97
Southern Riparian Scrub	USFS	0.33	5:1	1.65	0.66	2:1	1.32	2.97
Southern Sycamore Alder Riparian Woodland	USFS	0.81	5:1	4.05	1.64	2:1	3.28	7.33
Alternative 3								
Chamise Chaparral	BLM	0.00	1:1	0.0	0.02	1:1	0.02	0.02
Disturbed/developed	USFS	1.04	1:1	1.04	2.13	1:1	2.13	3.17
Mojave Creosote Bush Scrub	BLM	2.68	1:1	2.68	21.81	1:1	21.81	24.49
Mojave Wash Scrub	BLM	0.25	1:1	0.25	2.05	1:1	2.05	2.3
Riversidian Sage Scrub	USFS	9.57	5:1	47.85	28.19	2:1	56.38	104.23
Scrub Oak Chaparral	USFS	2.87	5:1	14.35	5.83	2:1	11.66	26.01
Southern Riparian Scrub	USFS	0.34	5:1	1.7	0.69	2:1	1.38	3.08
New Circuit								
Chamise Chaparral	USFS	8.03	3:1	24.09	23.05	1:1	23.05	47.14
Riversidian Sage Scrub	BLM	0.04	1:1	0.04	0.34	1:1	0.34	0.38
Riversidian Sage Scrub	USFS	1.98	5:1	9.9	5.96	2:1	11.92	21.82
Southern Coast Live Oak Riparian Forest	USFS	0.08	5:1	0.4	0.66	2:1	1.32	1.72
Southern Cottonwood Willow Riparian Forest	USFS	0.40	5:1	2.0	0.80	2:1	1.6	3.6
Southern Sycamore Alder Riparian Woodland	USFS	0.09	5:1	0.45	0.19	2:1	0.38	0.83
Reconductoring								
Chamise Chaparral (Segment ABG)	USFS	16.07	3:1	48.21	32.65	1:1	32.65	80.86

Vegetation Communities	Jurisdiction	Permanent Impacts (acres)			Temporary Impact (acres)			Total Estimated Mitigation (acres)
		Estimated Impact	Ratio	Estimated Off-site Mitigation	Estimated Impact	Ratio	Estimated On-site Restoration	
Disturbed/developed (Segment ABG)	USFS	7.77	1:1	7.77	25.28	1:1	25.28	33.05
Mojave Creosote Bush Scrub (Segment ABG)	BLM	2.85	1:1	2.85	23.16	1:1	23.16	26.01
Mojave Wash Scrub (Segment ABG)	BLM	0.23	1:1	0.23	1.86	1:1	1.86	2.09
Riversidian Sage Scrub (Segment ABG)	USFS	5.07	5:1	25.35	10.30	2:1	20.6	45.95
Southern Coast Live Oak Riparian Forest (Segment ABG)	USFS	3.25	5:1	16.25	6.60	2:1	13.2	29.45
Southern Mixed Chaparral (Segment ABG)	USFS	2.86	3:1	8.58	8.01	1:1	8.01	16.59
Southern Riparian Scrub (Segment ABG)	USFS	0.33	5:1	1.65	0.66	2:1	1.32	2.97
Southern Sycamore Alder Riparian Woodland (Segment ABG)	USFS	0.95	5:1	4.75	2.34	2:1	4.68	9.43
Southern Coast Live Oak Riparian Forest (Segment K)	BLM	0.02	1:1	0.02	0.04	1:1	0.04	0.06
Southern Mixed Chaparral (Segment K)	BLM	0.00	1:1	0.0	0.01	1:1	0.01	0.01

*State:
High Quality degrade to Low Quality= Two:One
Moderate Quality degrades to Low Quality= One:One
Low Quality remains Low Quality= zero

Note: The permanent and temporary impact calculations provided above are estimates based on the impact model described in Appendix C. Therefore, acreage numbers for the habitat types listed above may be smaller than those listed in the table. Preconstruction surveys will be conducted to estimate the acreage impacts and will be based on the final design not the impact model.

BIO-2 Vegetation Impact: Construction, operation, and maintenance activities would result in the introduction and dispersal of noxious weeds.

Invasive plants are generally non-native plants or noxious weeds that have been introduced into an environment in which they did not evolve and therefore usually have no natural enemies to limit their reproduction and spreading. The term "noxious weeds" includes all plants formally designated by the U.S. Secretary of Agriculture or other responsible State official as such, and these species usually possess one or more of the following characteristics: "aggressive and difficult to manage, poisonous, toxic, parasitic, a carrier or host of serious insects or disease, and being not native or new to or not common to the United States or parts thereof" (USFS Manual 2080.5, 1995).

The introduction of noxious and invasive weeds species is a special concern for native plant communities and is recognized by the BLM and USFS as a threat to native vegetation communities and wildlife. Noxious and invasive weeds pose a threat to the natural processes of plant community succession, fire frequency, biological diversity and species composition. Noxious and invasive weeds can affect the persistence of some populations of special-status species by replacing the foraging base, altering habitat structure, or excluding a species by vegetative growth.

Several noxious weeds, as defined by the California Invasive Plant Council (Cal-IPC) or the USFS, already exist within or near the proposed Project in well-established populations, often clearly associated with a source of disturbance. Four invasive species were mapped within the project corridors: tocalote, artichoke thistle, tree tobacco, and saltcedar. The presence of these species within the corridor(s) is of particularly high concern because the potential for them to spread is high. Fifteen invasive species were noted to occur within the Project corridors, but were not mapped due to their high frequency and known presence in the area: slender wild oat, wild oat, ripgut brome, soft chess brome, red brome, cheatgrass, blessed thistle, filaree, shortpod mustard, prickly lettuce, yellow sweetclover, rabbit foot grass, Mediterranean grass, sow thistle, tansy mustard. and rat-tail fescue. Six invasive species known from previous studies were also noted or mapped on access roads to the corridors: tree-of-heaven, giant reed grass, bull thistle, fennel, perennial pepperweed, and black locust. Five invasive species were not observed within the Project area or access roads but are believed to have a high potential of occurring after the Project construction due to nearby locations and their ability to spread to disturbed areas: eupatory, perennial sweet pea, Himalayan blackberry, Russian thistle, and Spanish broom.

Introduction and spread of non-native plant species would occur primarily during construction, and could continue to occur during the operation and maintenance phase of the proposed Project. The introduction of invasive, non-native species, especially noxious weeds, is very difficult if not impossible to reverse if not detected early. For that reason, a weed management plan will provide instruction on detection and prevention protocols.. The abundance of invasive and noxious weeds and forbs increases the fuel and continuity of fuels, facilitating more-frequent and hotter fires. This destroys the less-fire tolerant native plants and facilitates other exotic plants that thrive in disturbed areas, further transforming the plant communities (D'Antonio 2000). Vehicles moved from other areas supporting non-native or invasive species could introduce non-native or invasive plants by transporting seeds that may be clinging to vehicle structures or that have been incorporated into soil adhering to the vehicle. In addition, the potential for establishment of invasive plants could be increased when construction vehicles alter the structure of existing soils through compaction or excavation, which alters the ability of native plants to compete with introduced plant species.

For the purpose of this discussion, Project-related disturbance or impacts to all habitats, even disturbances such as grading for temporary road construction, were treated as permanent in large part due to the foreseeable establishment and spread of noxious weeds and the conversion of native habitats to ruderal habitats (or expansion of existing ruderal habitats) following disturbance. Noxious weeds often become established following disturbance. For example, in arid sites or in sites with poor nutrient availability noxious weeds may become established following water and/or nutrient addition such as may occur along roadways as a result of increased runoff or nitrogen deposition.

Typically in areas where few exotic species occur, the characteristics of the existing topsoil structure, cryptogammic crusts, or the existing native vegetation prevent weed seeds from germinating. Once soil disturbance has occurred, the soil structure or native biotic components are affected such that these factors no longer preclude the establishment of noxious or invasive weeds. Following establishment, new populations of weeds are often extremely difficult to eradicate. It may take several years or decades to re-establish the native soil structure and biota.

As many noxious weeds occurring in southern California are fast-growing plants adapted to high light conditions, removal of canopy vegetation, either in forests and woodlands or in chaparral and scrub habitats, may release weed seeds present in the seed bank from dormancy and allow them to germinate and establish.

Direct impacts associated with the introduction of noxious weeds could occur when noxious weeds become established in an area. These invasive plant species can cause a permanent or long-lasting change to the environment by increasing vegetative cover, creating a dense layer that prevents native vegetation from germinating, altering the edaphic and hydrological conditions through nitrogen fixation (as in Spanish broom [*Spartium junceum*]), or may drain the water table (as in giant reed [*Arundo donax*]). Noxious weeds can create such an unfavorable environment for wildlife that associate, mutualistic species necessary for native plant life cycles, such as seed dispersers, fossorial mammals, or pollinators, are lost from the area.

Indirect impacts attributed to the colonization of noxious weeds could include a gradual decrease in natural biodiversity as noxious weed infestations may extirpate native plant populations. The lingering effects of herbicide use to remedy noxious weed infestations could adversely impact native plants and wildlife and are discussed in further detail below (Table 6-3). Operational impacts could include the facilitation of noxious weed establishment and spread as a result of increased vehicular and human traffic.

The rationale for the success of the proposed mitigation strategy for impacts associated with noxious weeds contains a three-part approach. First, LADWP shall implement restoration of all areas subject to Project disturbance as defined in Mitigation Measure B-1a (Provide restoration/compensation for impacts to native vegetation communities). Second, LADWP shall implement Mitigation Measure B-2a (Prepare and implement a Weed Control Plan) which requires LADWP to adhere to the USFS management guidelines for reducing the potential for the introduction of invasive, non-native plant species in the ANF by implementation of the USFS Best Management Practices (BMPs) to reduce the potential spread of noxious weed propagules into remote, natural areas, or from roadsides into habitat interiors. The restoration of disturbed areas and general weed management practices such as vehicle cleaning would reduce the spread of noxious weeds on non-NFS lands. The final mitigation components identified in B-2b and B-2c (Remove weed seed sources from construction routes, and Remove weed seed sources from assembly yards, staging areas, tower pads, pull sites, landing zones, and spur roads) are intended to monitor and control the spread of noxious weeds, as it cannot be assumed that any suite of BMPs will be 100 percent effective in preventing all invasive propagule spread or release of existing noxious weed seed banks from dormancy. This will be required on NFS lands as identified in the Forest Service Guidelines for Noxious Weeds.

BIO-2 Mitigation Measure: The following prescriptions would prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way.

2a Prepare and implement a Weed Control Plan. LADWP/ANF/BLM shall prepare and implement a comprehensive, adaptive Weed Control Plan on NFS/BLM lands for pre-construction and construction invasive weed abatement. The long-term Weed Control Plan, including monitoring and eradication, will be defined as part of the 50 year Operations and Maintenance Permit. On the ROW easement lands administered by the USFS/BLM, the Weed Control Plan shall incorporate all appropriate and legal agency-stipulated regulations. The Weed Control Plan shall be submitted to the USFS/BLM for final authorization of weed control methods, practices, and timing before implementation of the Weed Control Plan on public lands. Weed control on BLM lands using pesticides will require an approved BLM Pesticide Use Permit. Pesticide Use Permits are issued for a maximum of three years. ROW easements on private lands shall include adaptive provisions such as wheel and equipment washing for the implementation of the Weed Control Plan. The Weed Control Plan shall include the following:

1) A pre-construction weed inventory shall be conducted on NFS and BLM lands by surveying all areas subject to ground-disturbing activity, including, but not limited to, tower pad preparation and construction areas, tower removal sites, pulling and tensioning sites, assembly yards, and areas subject to grading for new or improved access and spur roads. Weed populations that: (1) are rated High or Moderate for negative ecological impact in the California Invasive Plant Inventory Database (Cal-IPC 2006); (2) aid and promote the spread of wildfires (such as cheatgrass, Saharan mustard, and medusa head); and (3) are considered by the USFS and/or BLM as species of priority (for NFS/BLM lands only) shall be mapped and described according to density and area covered. In areas subject to ground disturbance, weed infestations shall be treated before construction according to control methods and practices for invasive weed populations designed in consultation with the USFS/BLM. The Weed Control Plan shall be updated and utilized for eradication and monitoring post-construction.
2) Weed control treatments shall include all legally permitted herbicide, manual, and mechanical methods applied with the authorization of the USFS/BLM. The application of herbicides shall be in compliance with all State and federal laws and regulations under the prescription of a Pest Control Advisor (PCA), where concurrence has been provided by the USFS/BLM, and implemented by a Licensed Qualified Applicator, if the herbicide is in the restricted use category.

The most effective herbicides with the least toxic surfactant available shall be used. Herbicides shall not be applied during or within 24 hours of a 70% chance of occurring rain event. Herbicides shall not be used within Riparian Conservation Areas (RCAs) on the ANF without approval of the USFS. In riparian areas, only water-safe herbicides, surfactants and adjuvants shall be used. Herbicides shall not be applied by spray equipment when wind velocities exceed 6 mph. Herbicides applied by sponge or paintbrush to cut stumps shall not be applied at over 15 mph. In areas containing special-status plants or animals, there will be a 5- to70-foot buffer where herbicides are not used. The size of the buffer will be determined and flagged for avoidance by an approved botanist/biologist, based on phenology or life cycle at time of treatment, rareness and imperilment of species, vulnerability of herbicide being used, concentration of herbicide used based on no observed effect concentrations and/or environmental conditions and terrain. Where manual and/or mechanical methods are used, disposal of the plant debris will follow the regulations set by the USFS/BLM. The timing of the weed control treatment shall be determined for each plant species in consultation with the USFS/BLM (on NFS/BLM lands) with the goal of controlling populations before they start producing seeds. Pre-emergent herbicides will only be used in areas that have a very low potential for supporting native plant species after disturbance, as determined by an agency botanist.

For the preconstruction and construction of the Project, measures to control the introduction and spread of noxious weeds in the Project work area shall be taken as follows.

3) On the ANF and BLM lands, surveying for new invasive weed populations and the monitoring of identified and treated populations shall be required at all sites impacted by construction (tower pads, staging areas, landing zones, etc.), including access/spur roads disturbed during the Project. Surveying and monitoring for weed infestations shall occur annually for years one to five and bi-annually for years six to ten, or until success criteria are met. Treatment of all identified weed populations shall occur at an appropriate interval so as to meet the success criteria. When no new seedlings or resprouts are observed at treated sites for three consecutive, normal rainfall years, the weed population can be considered eradicated and weed control efforts may cease for that impact site.
4) During Project preconstruction and construction, all seeds and straw materials shall be weed-free rice straw, and all gravel and fill material shall be certified weed-free by the county Agriculture Commissioners' Offices. Any deviation from this must be approved by a USFS/BLM botanist. All plant materials used during restoration shall be native, certified weed-free, and approved by the USFS/BLM.
5) Before beginning preconstruction activities, the USFS, in coordination with LADWP, will determine suitable locations to install field washing stations as part of the Weed Control Plan. Before commencing construction activities, LADWP shall document that all vehicles, equipment, and tools used on the Project have been cleaned at existing construction yards or legally operating car washes. This is a one-time requirement designed to address the potential of new species of weeds being transported from outside the area. If, however, vehicles, equipment, or tools are used or driven off paved roads on non-NFS lands, washing must occur before entering USFS lands.

   During Project preconstruction and construction, all vehicles, equipment, or tools which will be used outside of permitted Project roadways shall be washed at the nearest station before operating off-road. In other areas also designated by the USFS, vehicles, equipment, and tools will be washed at the nearest station after exiting those areas. Vehicles that do not leave permitted Project roadways are not required to be washed after the initial washing described above. All washing shall take place where rinse water is collected and disposed of in either a sanitary sewer or landfill, unless otherwise approved by the USFS.

   Written daily logs shall be kept for all vehicle/equipment/tool washing that states the date, time, location, type of equipment washed, methods used, and staff present. The log shall include the signature of a responsible staff member. Logs shall be available to the USFS for inspection at any time and shall be submitted to the USFS permit administrator on a monthly basis.

6) During Project operation and maintenance activities, weeds shall be cleared and disposed of in assembly yards, helicopter landing areas, tower pads, spur roads, staging areas, and any other disturbance areas in a USFS/BLM-approved method.

2b Remove weed seed sources from construction access routes. Before construction, LADWP shall initiate invasive species eradication. Populations to be treated will be small to moderate and isolated, but have the potential to spread aggressively during construction. Post-construction, these isolated populations will be included and treated according to the restoration plan. Per the Forest Service Manual (FSM) 2080 Best Management Practice (BMP) guideline, LADWP shall also remove or reduce sources of weed seed along the travel routes associated with Project construction.Weed species identified along the Alternatives and associated access roads include tocalote, artichoke thistle, tree tobacco, saltcedar, slender wild oat/wild oat, ripgut brome, soft chess brome, red brome, cheatgrass, blessed thistle, filaree, shortpod mustard, prickly lettuce, common horehound, yellow sweetclover, rabbit foot grass, Mediterranean grass, sowthistle, rat-tail fescue, tree-of-heaven, giant reed grass, yellow starthistle, bull thistle, fennel, perennial pepperweed, and black locust. To prevent the introduction or control the spread of noxious weeds, hand removal or other control methods will be implemented to reduce seed production during Project construction. Following Project approval and during the time of year when weed species can be observed and identified, LADWP shall identify, using a qualified plant ecologist, any other weed seed sources that could contribute to Project-related weed spread on the ANF and BLM lands. Target infestations identified by Project surveys should be controlled before construction. LADWP shall initiate eradication of the target infestations discovered during pre-construction surveys along construction routes.

2c Remove weed seed sources from assembly yards, staging areas, tower pads, pull sites, landing zones, and spur roads. Before construction and during each year of use for construction at all assembly yards, staging areas, tower pads, pull sites, landing zones, and spur roads within the ANF and BLM lands, weed-infested areas should be hand-weeded and/or treated as appropriate for the individual weed species under the guidance of a qualified plant ecologist or restoration ecologist, where concurrence on the ecologist has been provided by the USFS/BLM. Unless otherwise authorized by the USFS/BLM, weed control efforts in these areas shall be timed annually to reduce shortpod mustard, tocalote, bromes and other noxious weed seed production, by hand-removing or weed-whacking infestations when flowering has just started, but before seeds have been produced. All plant debris shall be disposed of at a USFS/BLM approved location. Weed control efforts shall commence in early spring (February – March), as indicated annually by a qualified plant ecologist or restoration ecologist in coordination with LADWP and USFS/BLM botanist or weed specialist.

2d Use of Herbicides to Control Exotic Weeds. LADWP may use herbicides where deemed necessary for the control of exotic weeds within the Project area. Weed control should be species-specific, and herbicides should be applied only if necessary after considering alternate methods or as part of a proven eradication strategy for that weed species. To minimize potential impacts, weed control treatments shall include all legally permitted herbicide, manual, and mechanical methods applied with the authorization of the USFS. Due to typically large seed banks and the ability of some weed species to vigorously resprout following removal methods, most species require more than one round of treatment, or require a different follow-up treatment method after the initial removal occurs. Any herbicide use on NFS lands would be subject to the review and approval of the appropriate USFS personnel and in coordination with LADWP.

Use of Herbicides to Control Exotic Weeds for Mitigation Measure BIO-2

As described under Impact BIO-2 (Construction, operation, and maintenance activities would result in the introduction and dispersal of noxious weeds), several invasive plant species have been detected along the Project ROW. As part of a comprehensive Weed Control Program, several options may be utilized to limit or reduce impacts from invasive plants. To date, several methods exist and are regularly prescribed for the eradication of existing weed populations depending on their location and the habitat type they infest. Some of these include herbicide application, mechanical removal, biocontrol methods, prescribed burns or floods, and shading. The removal of established noxious weed populations is best accomplished by species-specific methodologies, which may include a combination of the above removal procedures or precise timing of specific actions. Due to typically large seed banks and the ability of some weed species to vigorously resprout following removal methods, most species require more than one round of treatment, or require a differing follow-up treatment method after the initial removal occurs. A suite of known species-specific control methods is presented in detail in the Weed Risk Assessment (Appendix J of the EIS/EIR [LADWP/USFS/BLM 2011]).

Herbicides are any chemical agents, taken from a broader spectrum of pesticides, that target the specific control or removal of plants. Many weed control programs rely heavily or solely on herbicidal methods, as these are often assumed to present the most efficient and cost-effective opportunities for eradication, especially of large populations. However, herbicides may harm or kill desirable native vegetation occurring in close proximity to or even downstream from the targeted weeds. Additionally, herbicides may be detrimental to wildlife species such as amphibians (Relyea 2005) or negatively impact water quality. The potential for runoff to streams will need to be determined on a site-by-site basis according to which biological resources are within each area. To minimize potential impacts, weed control treatments shall include all legally permitted herbicide, manual, and mechanical methods applied with the authorization of the USFS. The application of herbicides shall be in compliance with all State and federal laws and regulations under the prescription of a Pest Control Advisor (PCA), where concurrence has been provided by the USFS, and implemented by a Licensed Qualified Applicator who has been clearly informed of the nature of surrounding native vegetation. Herbicides shall not be applied during or within 72 hours of a scheduled rain event. Herbicides shall not be used within Riparian Conservation Areas (RCAs) on the ANF without approval of the USFS. In riparian areas, only herbicides specifically approved for use in wetland environments should be used in any area where overspray could potentially be washed into watersheds. Herbicides shall not be applied when wind velocities exceed 6 mph.

Noxious weed control measures prescribed as mitigation for Project impacts should be species-specific, and herbicides should be applied only if necessary after considering alternate methods or as part of a proven eradication strategy for that weed species. Many weed species require specific timing or methods of herbicidal application (e.g., disturbing a protective waxy cuticle to allow uptake, applying herbicide after the plant has bolted but before seed set), and if such methods are not followed, it is likely native vegetation will be harmed by herbicidal contamination while the target weed species are left unaffected.

Because the terrain in several locations throughout the proposed alignment is steep and difficult to access, and several of the weed species present in the ROW and access roads are typically controlled through the use of herbicides, LADWP may opt to use herbicides as one component of the Weed Control Program.

While the overall benefits of herbicide use are generally straightforward, herbicide use may have detrimental effects on ecosystem values and functions. As noted in the CNPS Policy on the use of herbicides in situations where native vegetation may be affected, the trade-off between the benefits and costs of using herbicide—either proven or alleged—has made it difficult for the public at large, CNPS members, other organizations, and public agencies to evaluate whether or not to use herbicides (CNPS 2008). It is generally desirable to select an herbicide that has low toxicity, will not move from its target or leach into groundwater (low water solubility), and will not remain in the environment for a long period of time (low persistence). Furthermore, the application method selected depends on the type of control needed, the type of vegetation, and the site situation (site conditions and locations). Not all herbicides or application methods are equally appropriate, effective, or safe, given different site conditions and weed species.

There are several exposure scenarios possible for herbicides and wildlife. These include direct spray; indirect contact through grooming or contact with affected vegetation; and ingestion of contaminated media, including vegetation, prey species, and water. Because of the relationship of body weight to surface area and to the consumption of food and water, small animals will generally receive a higher dose, in terms of body weight, than large animals will receive for a given type of exposure (Durkin 2007). However, with the measures prescribed as mitigation, the potential for impacts to aquatic fauna will be minimized. For non-target terrestrial plants, the primary hazard is unintended direct spray or spray drift. Offsite drift typically depends on the droplet size and meteorological conditions. Other offsite exposure scenarios for vegetation include percolation, runoff, sediment transport, and wind erosion.

Table 17 contains a list of herbicides, including their potential risks to native vegetation and wildlife, that are proposed for use within the Project area on NFS lands. It is important to note that there is an extensive variability related to different types of exposure scenarios and dosages for each herbicide. Furthermore, the effects of certain herbicides can vary exclusively at the species level. Therefore, the information presented in Table 17 is intended as a general overview of the possible effects of herbicide use. The application of an herbicide should always be conducted by a licensed herbicide applicator. Full analyses of the effects of these seven listed herbicides on human and ecological health can be found in the Forest Service Risk Assessment Final Reports (http://www.fs.fed.us/ foresthealth/pesticide/risk.shtml) and is incorporated by reference.

As the proposed Project traverses a wide variety of vegetation communities and supports several different species of noxious weeds, a variety of herbicides may be selected. For example, at locations where aquatic species occur, an herbicide that does not contain added surfactants would be used. Surfactants are materials added to enhance the ability of the herbicide to adhere to the treated surface and have been shown to adversely affect aquatic life, including fish and amphibians (Solomon and Thompson 2003; Tatum 2004).

TABLE 17. GENERAL EFFECTS OF HERBICIDES ON PLANT AND WILDLIFE SPECIES

Herbicide	Effects on Vegetation	Effects on Wildlife
Chlorsulfuron	• Rate and extent of uptake following foliar application varies by species • Inhibits an enzyme that is essential for plant growth	• Causes weight loss and decreased body weight gain in experimental mammals • Appears to have low toxicity in mammals, birds, fish, and invertebrates
Clopyralid	• Highly selective toxicity to terrestrial plants (primarily broadleaf species) • Relatively non-toxic to aquatic plants and grasses • Regulates plant growth by acting as a synthetic auxin, thus altering plant's metabolism and growth characteristics	• Appears to be relatively non-toxic to terrestrial or aquatic wildlife • May adversely affect liver and kidney weights and gastric epithelial tissue • Appears to show no effect on viability of bird eggs and chick immune systems
Dicamba	• Mimics plant hormone indole-3 acetic acid • Mechanism appears to involve a stimulation of ethylene production leading to accumulation of abscisic acid and/or cyanide resulting in abnormal growth	• Displays an apparent pattern of interspecies scaling, with smaller animals being less sensitive than larger animals • Relatively non-toxic to mammals, fish, and amphibians • Acute toxicity to birds appears to be generally low • May reduce growth and stunt eye development in pre- and post-hatch birds
Glyphosate	• Inhibits shikimic acid pathway, effectively blocking synthesis of certain phenolic compounds and aromatic amino acids • Inhibits photosynthesis, respiration, and nucleic acid synthesis	• May reduce food conversion efficiency leading to loss of body weight in mammals and birds • Certain surfactants used with glyphosate are much more toxic to fish that others • May cause histological changes in gills, kidneys, and liver of some fish
Imazapyr	• Inhibits an enzyme that is essential for plant growth • Practically non-toxic to conifers	• Appears to be relatively non-toxic to terrestrial and aquatic animals
Picloram	• More toxic to broadleaf plants than grasses • Mimics naturally occurring auxins leading to uncontrollable and abnormal growth	• Appears relatively non-toxic to terrestrial animals • Moderately toxic to aquatic animals, particularly some fish • May affect fry survival and growth in some fish
Triclopyr	• Mimics indole auxin plant growth hormones causing uncontrollable growth • At sufficiently high levels of exposure, abnormal growth is so severe that vital functions cannot be maintained and plants die	• May cause developmental effects at levels that cause maternal toxicity in mammals • May have adverse affect on mammalian kidney functions • Higher concentrations may cause mortality or immobility in frog tadpoles • Larger doses may cause a decrease in body length and smaller doses may lead to lethargic behavior in some fish • Relatively non-toxic to birds

Source: http://www.fs.fed.us/foresthealth/pesticide/risk.shtml

The use of herbicides in the Project area would comply with regulations set forth by the U.S. Environmental Protection Agency (EPA) and California Department of Pesticide Regulation (CDPR). Additionally, any herbicide use on NFS lands would be subjected to the review and approval of the appropriate USFS personnel. Although overspray may adversely affect some non-target species, the removal of noxious or invasive weeds and the control of existing populations would be considered a beneficial effect. To reduce the effects of herbicides, if used, LADWP would implement Mitigation Measure 2a (Prepare and implement a weed control plan).

BIO-3 Vegetation Impact: Construction of the proposed Project transmission line would remove or disturb riparian communities.

Riparian and wash communities occur in a variety of the surface water resources that are present in the proposed Project area. Riparian and wash habitat within the proposed Project is highly diverse and encompasses several stand types. These include:

- desert wash
- coast live oak riparian forest
- Southern cottonwood willow riparian forest
- Southern willow scrub

Riparian woodlands and arid dry washes provide important habitat for local and migratory wildlife that are considered sensitive resources and are of concern to federal and state agencies. Several species utilize the riparian communities during breeding season and are dependent on the riparian communities, such as breeding birds and species that utilize this area as either their winter and/or spring range. Riparian habitats provide the majority of foraging habitat for wildlife in the Project area. Riparian and wash habitat occurs along the San Francisquito Creek, Bouquet Creek, the Santa Clara River, Cache Creek, Oak Creek, Anaverde Creek, Pine Tree Canyon, and small tributaries throughout the Project area that function as habitat for a variety of native wildlife species.

The habitat also serves as foraging habitat for many birds of prey that may have home ranges extending beyond the Project limits, such as the California condor. Installation of new tower locations would result in the permanent loss of native and non-native vegetation communities including riparian areas and non-native grasslands. New transmission lines may disrupt or hamper the natural foraging behavior or flight patterns of avian species by presenting new obstacles and periodic maintenance-related disturbance. Resident birds which are familiar with the existing locations and configurations of transmission lines may need to slightly adjust behavior to account for the additional lines, while migrant birds may not notice the additional lines, but will instead have to adjust to the presence of towers and transmission lines as a whole. Temporary and permanent loss of habitat that raptors use for foraging would be considered a significant impact under CEQA without mitigation.

Mojave wash scrub habitat occurs primarily within the Northern Region of the proposed Project and is a relatively common resource in parts of the Antelope Valley. Approximately 78 acres of Mojave wash scrub was mapped in the Project area along the new 230 kV transmission line Alternatives and the loss from construction of the proposed Project represents a permanent reduction of approximately one percent of the mapped resource. Activities associated with the construction of transmission line towers and roads, pulling stations, and staging areas could substantially degrade and remove Mojave wash scrub habitat within the Project footprint. Although this unique hydrogeomorphic landform is relatively common in parts of the Antelope Valley, much of this habitat has been lost over the last several decades due to development and agricultural practices, particularly in undeveloped portions of the Project area where off-road vehicle paths and paved roads transect desert washes. Desert wash habitats play an important role in conveying surface flows during the rainfall season to other habitats located down slope that support special-status plants such as the alkali mariposa lily.

Approximately 27 acres of southern coast live oak riparian forest habitat, eight acres of southern cottonwood willow riparian forest habitat, 65 acres of southern riparian scrub habitat, 45 acres of southern sycamore-alder riparian woodland habitat, and 13 acres of southern willow scrub habitat occurs in the four new 230 kV transmission line Alternatives of the Project. Project impacts would represent less than three percent for southern coast live oak riparian forest and southern willow scrub, less than five percent for southern riparian scrub and southern sycamore-alder riparian woodland, and just over five percent for southern cottonwood willow riparian forest. Due to its ability to support wildlife and the ongoing loss of riparian habitat state wide, CDFG considers riparian habitat to be worthy of consideration, both in general and within each of the specific habitats listed above, as shown by its listing within the CNDDB (CDFG 2011).

While the transmission line would generally be constructed to span or avoid the riparian areas and arid washes in the right-of-way, Project construction activities would result in the temporary removal or disturbance of riparian vegetation in some areas, especially along access and spur roads. This may potentially occur from driving construction vehicles through drainages that support riparian vegetation or construction areas (e.g., tower pads or spur roads) that may be entirely unavoidable due to engineering constraints. Clearing or grading associated with the placement of towers, construction staging areas, and the construction and widening of access and spur roads may also result in the alteration of soil conditions, including the loss of native seed banks and changes to the topography and drainage of a site, such that the capability of the habitat to support native vegetation is impaired. The temporary or permanent loss to such communities would be a significant adverse impact under CEQA. .

Riparian Conservation Areas (RCAs)

For the BRRTP, it was necessary to identify and map areas on National Forest lands which would be considered Riparian Conservation Areas (RCAs). While riparian areas are considered on both NFS lands and non-NFS lands, RCAs are defined only for the ANF as required by the Forest Land Management Plan. RCAs combine the ecological concerns of riparian ecosystems with the hydrologic concerns of floodplains and streamside slopes. The goal of establishing an RCA is to protect, maintain, or improve water quality, site productivity, channel stability, riparian vegetation, and riparian-dependent species and habitats. An RCA is defined as "an area delineated next to water features requiring special management practices to maintain and/or improve watershed and riparian-dependent resource conditions" (USFS 2005). Therefore, any riparian areas having important biological and/or hydrologic riparian characteristics within the Project area were identified by the USFS as RCAs using the Five-Step Project Screening Process for Riparian Conservation Areas.

RCAs include areas within one mile of any known occurrence of threatened, endangered, proposed, candidate, and/or sensitive species; all 100-year recurrence interval floodplains; areas within 328 feet of each edge of perennial streams and lakes or reservoirs; and areas within 98 feet of each edge of seasonally-flowing or intermittent streams. Water is a limited resource on the ANF and plays an important role in the life histories of many forest dependant species, especially in the semi-arid setting of southern California. Both aquatic and terrestrial ecosystems are considered when classifying RCAs because of the interaction of the two for species migration and travel. Suitable habitat may extend beyond the riparian zone where terrestrial ecosystems contribute to the overall functional habitat. Actions conducted within an RCA must meet specific criteria defined by the USFS which include both biological and watershed goals and functions. In addition, actions that result in effects considered other than neutral or beneficial may not be conducted without an amendment to the existing Forest Plan (USFS 2005).

To provide for the management of species that use riparian areas, each RCA has a buffer area of associated upland habitat which corresponds to the unique life history of the species. The size of an RCA is determined by characteristics such as topography, species present, and connectivity to other RCAs. For example, large intermittent and perennial streams dominated by riparian vegetation may support numerous special-status plants and wildlife. These buffers may extend from 30 m to over a mile depending on the species that inhabit the RCA. However, even small drainages that may have water for only a short period of time can be crucial resources for breeding (i.e., amphibians and birds), foraging, or wildlife movement corridors. Within the Project area several RCAs contain habitat that supports threatened and endangered species including the arroyo toad.

Two hundred sixteen RCAs were identified during the field assessments for the proposed Project on ANF lands. An additional 47 centerline crossings were determined based on available GIS data, for a total of 263 RCAs within the proposed Project. RCAs were identified for areas that crossed the transmission line ROW or along access roads that would be used and upgraded during construction of the proposed Project. A summary of the crossing data is included in Table 18. Of the total 263 RCAs, 181 would be subject to Project impacts. Impacts to the RCAs would occur from road grading, tree removal, stream diversion, or similar actions that would have a negative impact on the RCA. Road grading and expansion could also result in sedimentation that could enter nearby or adjacent RCAs.

TABLE 18. RCA CROSSING POINTS SUMMARY.

Drainage Type	Crossing Type	Total	Plan Amendment Required
ROAD CROSSINGS			
Perennial	Arizona	0	0
	Paved Arizona	0	0
	CMP	1	1
	None	0	0
Intermittent	Arizona	4	3
	Paved Arizona	0	0
	Ford	6	3
	Paved Ford	0	0
	CMP	12	7
	Concrete Culvert	0	0
Ephemeral	Arizona	0	0
	Paved Arizona	0	0
	Ford	81	73
	Paved Ford	40	15
	CMP	70	38
	Concrete Culvert	2	2
	Subtotal	***216***	***142***
LINE CROSSINGS*			
Perennial	N/A	0	0
Intermittent	N/A	47	35
Ephemeral	N/A	0	0
	Subtotal	**47**	**35**
	Total	***263***	***177***

Potential Project impacts that could occur on RCAs would not be neutral or beneficial and the actions are not consistent with the Forest Plan (USFS 2005) and would require a Forest Plan Amendment. Road expansion could also result in the mobilization of large quantities of sediment that could enter nearby or adjacent RCAs. However, sediment analysis shows that the amount of sediment anticipated from construction of this project is negligible (see Appendix B (Watershed Analysis Report) of the Water Resources Technical Report for the BRRTP). Road maintenance including periodic grading would occur throughout construction. As RCAs consist of riparian areas and their adjacent upland habitats, these areas support a wide variety of both plants and wildlife. Although 181 RCAs are expected to be impacted by Project activities, because some RCAs will be crossed multiple times by access roads the total number of required Plan Amendments is 177.

A formal delineation of each riparian area would be conducted and LADWP would apply for permits from the USACE, RWQCB, and CDFG for activities in riparian habitat. In addition, no activities would be allowed within any RCA without the concurrence of the Forest.

BIO-3 Mitigation Measure: Incorporate riparian area avoidance and permit measures.
The following actions and all permit conditions detailed within the Nationwide 12 permit and RWQCB 401 water quality certification (subject to separate approval) would be implemented by the construction manager and environmental compliance monitor(s).

3a. LADWP shall not construct or modify any structure, culvert, or bridge or modify any habitat on NFS lands in RCAs without the authorization of the USFS. Vegetation removal or road construction shall not occur in RCAs during the breeding season for nesting birds (February 1 to August 15) unless otherwise approved by the USFS. LADWP shall prepare and implement a USFS RCA Treatment Plan for the Project. This Plan shall include the specific activities that will occur at each of the RCA points crossed by the Project, including the amount and type of vegetation to be cleared, the type of road crossing or improvement allowed for wet and dry crossings, and the methods that would be employed to reduce the effects of the Project on water quality. The Plan shall include seasonal restrictions for vehicle or equipment passage, restrictions on what activities may occur (such as grading, vegetation removal or tree trimming), monitoring requirements, and restoration requirements. This Plan shall be submitted to the USFS for approval before construction or the grading of any access road.
3b. Before construction, qualified resource specialists shall stake and flag or fence exclusion zones around all identified riparian areas. Such exclusion zones will include a 10-foot buffer to preclude sediment intrusion into the riparian areas. Earth-moving activities shall be restricted from these zones, although essential vehicle operation and foot travel will be permitted on existing roads, bridges, and crossings. All other construction activities, vehicle operation, material and equipment storage, and other surface-disturbing activities will be prohibited within the exclusion zone.
3c. In areas where riparian habitats are unavoidable, the construction manager, in consultation with the lead environmental compliance inspector and USFS, shall narrow the width of the road through the area to the minimum extent required for safe travel. New spur roads and existing access road improvements shall be constructed and implemented using methodology that preserves existing hydrology.
3d. Towers shall not be constructed in riparian areas.
3e. All temporarily disturbed riparian areas that would not be utilized for future routine operation and maintenance activities shall be restored according to the guidelines of the Habitat Restoration Plan to the extent required to ensure no net loss of habitat functions and values. Following construction activities, the areas will be restored as soon as practicable.
3f. Permanent, unavoidable losses of riparian areas will be mitigated by restoration and/or preservation of off-site habitats, as outlined in the Habitat Restoration Plan. The final mitigation and off-site restoration locations will be determined in consultation with LADWP and the responsible agency(s). Mitigation acreage ratios will be consistent with those listed in Table BIO-MM-1.

BIO-4 Jurisdictional Water and Wetlands Impact: The proposed Project could adversely affect jurisdictional waters and wetlands.

Direct and indirect impact to jurisdictional Waters of the U.S., riparian conservation areas, and possibly wetlands (i.e., areas regulated by the USACE and RWQCB, USFS, and/or CDFG) would occur from the Proposed Project. Impacts to jurisdictional areas cannot be clearly defined until a final route is selected that includes project-specific features and final engineering. However, a preliminary evaluation by the LADWP engineers and USFS biologists documented RCAs that would be affected or avoided. The Proposed Project would impact the following vegetation communities that generally occur in jurisdictional areas, some of which may be wetland: Riversidian Sage Scrub, Mojave wash scrub, willow/mulefat scrub, oak riparian area, freshwater, disturbed wetland and non-vegetated channels. The extent of disturbance will be identified during final engineering.

Direct impacts would include removal of wetland/riparian vegetation and/or filling of jurisdictional areas to create stream crossings. Examples of indirect impacts to jurisdictional resources are streambank erosion and stream sedimentation. Important functions of jurisdictional areas include flood conveyance to storage, sediment control, providing surface water and food for wildlife, providing spawning grounds for aquatic fauna, providing habitat for rare and endangered species, providing corridors for wildlife movement, and providing erosion control and preservation of water quality.

Surface water resources along the Proposed Project include desert washes and other streams, the majority of which are dry most of the time. The majority of these watercourses would be spanned by the transmission lines. However, impacts to jurisdictional waters, wetlands or riparian conservation areas would still occur, for example, where an access road would cross a water course. Impacts to jurisdictional areas are significant under CEQA but mitigable to less than significant levels with the implementation of the following Mitigation Measures.

BIO-4 Mitigation Measure Provide restoration/compensation for affected jurisdictional areas.
4a. Impacts to areas under jurisdiction of the USACE, RWQCB, USFS and CDFG shall be avoided to the extent feasible. Where avoidance of jurisdictional areas is not feasible, including emergency repairs, and access/spur roads within RCAs, the applicant shall provide the necessary mitigation required as part of wetland permitting. This will include creation, restoration, and/or preservation of suitable jurisdictional habitat along with adequate buffers to protect the function and values of jurisdictional area mitigation. The location(s) of the mitigation will be determined in consultation with LADWP and the responsible agency(s) as part of the wetland permitting process.
4b. Measures 3a, b, c, and d will also be incorporated to avoid and protect jurisdictional areas.

6.2 WILDLIFE IMPACTS

Project construction and operation and maintenance would produce direct and indirect impacts to common wildlife and their corresponding habitats. Direct impacts include temporary and permanent wildlife habitat disturbance, fragmentation, displacement, vehicle-related mortalities, and avian collisions. Indirect impacts include those associated with increased human presence. Impacts are discussed with relevance to seven broad areas that present potential impacts on ecosystem function and biodiversity. They include:

- Vegetation/habitat removal
- Habitat modification
- Edge-associated impacts
- Creation of barriers to movement of some fauna, potentially fragmenting and isolating populations
- Provision of conduits for movement of non-native and exotics
- Mortality arising from striking structures and lines and periodic maintenance of the easements
- Easements as a source of biotic and abiotic effects

BIO-5 Wildlife Impact: Construction activities may result in direct wildlife mortality and would result in temporary displacement of wildlife.

Construction activities and increased vehicular traffic on access roads could disturb wildlife species. Direct loss of small mammals, reptiles, and other species could occur along the proposed Project. This action would result primarily from the use of construction vehicles and the grading of laydown areas for tower construction and line pulling. Fossorial species may be harmed through crushing of burrows or loss of refuge from predators, and direct mortality from construction activities. Construction activities and human presence can also alter or disrupt breeding and foraging habitat. Clearing and grading would generate the greatest construction impacts on wildlife within the tower construction areas, although not necessarily for species which are more likely to be encountered outside of direct construction such as water-dwelling species. Removal of vegetation during the construction phase of this Project would temporarily diminish the amount of habitat available for wildlife in the area. Direct mortality of wildlife, particularly ground- or shrub-dwelling and fossorial species, is anticipated to occur during habitat clearing, earth removal, grading, digging, and equipment movement.

Mortality related to construction would be incurred primarily by burrow-dwelling animals, eggs and nestlings of bird species with small, well-hidden nests, and species with slower or constrained mobility (e.g., snakes, lizards, and amphibians). More mobile species, like birds and larger mammals, are likely to relocate and utilize an adjacent habitat area if it is present during the land clearing and grading phase associated with tower construction. The less mobile and smaller wildlife species could be potentially impacted by construction equipment, whereas other wildlife, such as birds and large mammals such as deer, may be temporarily displaced from the immediate construction areas.

Displacement of species could occur, as species would typically seek to avoid areas where construction activities are initiated. The extent of such displacement would be partially dependent upon the type of construction activity as well as the duration and intensity. Individuals displaced from the areas cleared of native vegetation could be jeopardized if adjacent habitats are already at carrying capacity or are less suitable habitat, or if the animals are exposed to an increased risk of predation.

While helicopter effects on wildlife have not been extensively studied, some research has found that noise from aircraft, including helicopters, can be very stressful on wildlife. Helicopter noise can cause panic reactions in animals, leading to increased potential for injury due to collisions or stumbling as opposed to regular escape responses, which are generally more controlled (Radle 2007). A survey from USFWS of biologists, refuges, hatcheries, and research centers found that waterfowl are most frequently disturbed by noise from aircraft and that wildlife reactions can range from minor responses in animal behavior to possible abandonment of an area (Radle 2007). Animals that disperse from an area due to helicopter construction may also be subject to a greater risk of mortality than previously depending on their familiarity with the new area and the presence of predators. Dispersal- or noise-induced stress may lower animals' fitness and temporarily reduce their abilities to mate and raise young. The use of helicopters would not necessarily remove the possibility of ground vehicles trampling, injuring, or killing wildlife, particularly fossorial species, but would likely reduce the number of incidences or likelihood of this occurring. Helicopter sites would eliminate the need for new access roads to tower locations, reducing the amount of habitat loss that would occur due to road grading, crane pads, and laydown areas. However, helicopter construction would still require portable landing pads, helicopter fly yards/staging areas and associated access roads, vegetation clearing at tower sites, guard structures, and access road pullouts. While the typical foundations for tower legs would typically be four feet in diameter and inserted at a depth of 21 to 25 feet, the micropile foundations for helicopter-constructed towers would consist of three to eight casings from six to nine inches in diameter and inserted from one to eight feet into the ground. Micropile foundations would require less disturbance and could be built without the use of heavy equipment necessary for traditional tower leg construction. Because heavy equipment would not be required, construction of access roads and subsequent vegetation removal, habitat fragmentation, and wildlife displacement would not occur in the same magnitude as if access roads were being graded through the same areas, although temporary wildlife displacement is likely to occur due to the noise and presence of the helicopter.

BIO-2 Mitigation Measure: The following prescriptions would prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way.
See detailed description above.

BIO-3 Mitigation Measure: Incorporate riparian area avoidance and permit measures.
See detailed description above.

BIO-4 Mitigation Measure: Provide restoration/compensation for affected jurisdictional areas.
See detailed description above.

BIO-5 Mitigation Measure: Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife.

5a. Conduct preconstruction surveys in locations where potential habitat exists for special-status species. If sign or habitat is detected during the surveys, construction activities will be monitored by biologists, or exclusion fencing will be placed around work areas. If individuals are found within the area of potential effect, they will be relocated to areas (as authorized by the Biological Opinion for federally listed species) that are not potentially impacted by the Project.

5b. Cover all steep-walled trenches or excavations used during construction to prevent entrapment of wildlife (e.g., reptiles and small mammals). If the trenches or excavations cannot be covered, a ramp that will sufficiently allow wildlife to escape shall be placed into the trench or excavated area, or exclusion fencing (i.e., silt fencing) shall be installed around the trench or excavation to prevent entrapment of wildlife. Open trenches, or other excavations that could entrap wildlife, shall be inspected by the qualified biologists a minimum of three times per day and immediately before backfilling. Furthermore, employees and contractors shall look under vehicles and equipment for the presence of wildlife before moving the vehicle or equipment. If wildlife is observed, no vehicles or equipment would be moved until the animal has left voluntarily or is removed by the qualified biologist. Should a dead or injured special-status species be found in a trench or excavation or anywhere in the construction zone or along an access road, the qualified biologist shall contact BLM and/or USFS (for activities on land managed by the agencies) and the Wildlife Agencies within 48 hours of the finding. The qualified biologist shall report the species found, the location of the finding, and the cause of death (if known), and shall submit a photograph and any other pertinent information.

BIO-6 Worker Environmental Awareness Program

Bio-6 Mitigation Measure: Implement a Worker Environmental Awareness Program.
A qualified biologist(s) shall conduct a detailed biological Worker Environmental Awareness Program (WEAP) for all Project personnel before any construction or activities within the Project footprint. The WEAP shall include discussions of Project permits and brief summaries of their conditions; discussions of agency involvement, their applicable sensitivity measures, and relevant environmental protection legislation (e.g., the Endangered Species Act, the Migratory Bird Treaty Act); descriptions of special-status species and other sensitive resources that could exist in the Project area, along with their locations, legal status and protections; and a review of all measures to be implemented for avoidance of these sensitive resources. The final list of wildlife species to be included in the WEAP may be reduced at the discretion of the biologist with concurrence from applicable agencies. BIO-6 is in addition to LADWP's General Practice (GP) 69 WEAP, which does not provide the level of biological detail this mitigation measure provides.

6a. Training materials and briefings shall also include the consequences of non-compliance with these acts; identification and values of plant and wildlife species and significant natural plant community habitats; fire protection measures; sensitivities of working on NFS lands and identification of USFS sensitive species; hazardous substance spill prevention and containment measures; a contact person in the event of the discovery of dead or injured wildlife; and review of mitigation requirements. Discussion of GPs and BMPs shall include topics such as appropriate work limits, avoiding the spread of non-native plant species, fire safety, wildlife avoidance, trash and debris collection, spill prevention and containment protocol, and appropriate protocol for passage and/or construction near riparian zones. Sightings of sensitive wildlife species or harmful encounters with any wildlife species shall be reported to the Project biologist immediately for evaluation and, as necessary, reporting to agencies.

6b. The WEAP shall also include the protocol to be followed when road kill is encountered in the work area or along access roads to minimize potential for additional mortality of scavengers, including listed species such as the California condor. On NFS/BLM lands, road kill shall be reported to the USFS/BLM or other applicable agency within 24 hours. On non-NFS lands, road kill shall be reported to the appropriate local animal control agency within 24 hours. Training materials and a course outline shall be provided to the USFS/BLM for review and approval at least 30 days before the start of construction. Maps showing the location of special-status wildlife, fish, or populations of rare plants, exclusion areas, or other construction limitations (e.g., limited operating periods) will be provided to the environmental monitors and construction crews before ground disturbance.

6c. The training shall be conducted for all crew members present for the start of construction. If new crew members are brought to the Project after this time, they shall take part in the WEAP before beginning construction work; if the biologist is not available at this time, new crew members shall be given a summary handout of the WEAP until the full WEAP can be administered by the Project biologist, to be conducted no more than one workweek following the crew members' assignment to the Project. All crew members who have completed the WEAP shall submit their names to a list to be updated continuously and furnished to agencies upon request. No construction worker may work in the field for more than five days without participating in the WEAP.

BIO-7 Wildlife Impact: Construction and operation of the transmission line would result in a potential hazard for raptor species throughout the life of the project

Major raptor species utilize the existing lattice steel transmission towers as nesting and perching locations during the raptor breeding season of January through June. Overall foraging capabilities will probably not be appreciably changed by implementation of the project, as tower design will be changed as possible to implement structures that discourage perching by raptors, as required by mitigation for BIO-11. In most areas of the project, transmission lines are already present along the proposed alignments, and the Project would add an additional line to those; Segment C, however, has no existing transmission lines and would require an entirely new transmission corridor, potentially affecting foraging abilities for raptors which are present in this area. Similarly, flight patterns will likely remain relatively unchanged by implementation of this Project unless there is construction on Segment C. Tower design and construction adjacent to existing transmission lines will reduce the likelihood of increased collisions, but may still result in collisions with tower elements such as the static wire, which is narrower and more difficult for birds to discern than the conductor wires. Helicopter construction near active nests may disrupt mating or raising of young by adults due to noise disturbance, depending on factors such as proximity, species, time of year, and ambient noise. This could lead to nest abandonment, possibly resulting in a lost clutch. Impacts to an active nest of any raptor species would be considered potentially significant under CEQA, requiring mitigation to reduce the impact to less than significant levels.

BIO-7 Mitigation Measure: Impacts to Raptors

7a. If Project construction activities cannot occur completely outside the bird breeding season, then pre-construction surveys for active nests shall be conducted by a qualified biologist within 1,200 feet of the construction zone no more than seven days before the initiation of construction that would occur between February 1 and August 15. The required survey dates may be modified based on local conditions (e.g., high altitude locations) with the approval of the CDFG, BLM, and/or USFS. LADWP shall be responsible for designating qualified biologists who can conduct pre-construction surveys and monitoring for breeding birds. The résumé of the proposed biologists will be provided to the BLM and USFS for concurrence before ground disturbance. If breeding birds with active nests are found, a biological monitor shall establish a species-specific buffer around the nest for ground-based construction activities and a one-mile buffer for helicopter use if helicopters are flying below 300 feet, and no activities will be allowed within the buffer(s) until the young have fledged from the nest or the nest fails. If nesting bald or golden eagles are identified, a 660-foot no activity buffer will be implemented. The buffer (660-foot eagle and one-mile helicopter) may be adjusted to reflect existing conditions, including ambient noise, topography, and disturbance, with the approval of the U.S. Fish and Wildlife Service (USFWS), CDFG, BLM or USFS, as appropriate (USFS 2005). On NFS lands, the USFS shall apply the USFS Land Management Plan Standard S18 (Part 3 of the Land

Management Plan), which states, "Protect known active and inactive raptor nest areas. Extent of protection will be based on proposed management activities, human activities existing at the onset of nesting initiation, species, topography, vegetative cover, and other factors. When appropriate, a no-disturbance buffer around active nest sites will be required from nest-site selection to fledging." If for any reason a bird nest must be removed during the nesting season, LADWP shall provide written documentation providing concurrence from the USFWS and CDFG authorizing the nest relocation. On NFS lands, this will include coordination and written approval from the USFS. On BLM lands, this will include coordination and written approval by the BLM. LADWP shall provide a written report documenting the relocation efforts. The report shall include what actions were taken to avoid moving the nest, the location of the nest, what species is being relocated, the number and condition of the eggs taken from the nest, the location of where the eggs are incubated, the survival rate, the location of the nests where the chicks are relocated, and whether the birds were accepted by the adopted parent.

7b. Before construction, LADWP shall identify all existing raptor nests that would be affected by Project construction. LADWP shall coordinate with the USFWS, CDFG, USFS and BLM for the proposed removal of nests that may present safety issues associated with the construction activities. All nest removals shall occur after the nest is demonstrated to be inactive by a qualified biologist and have been shown to not result in take as defined by the Migratory Bird Treaty Act (MBTA).

BIO-8 Wildlife Impact: Construction activity during the breeding season could potentially affect nesting birds.

The season and timing of construction activities could potentially disrupt/disturb or negatively impact or influence mating rituals and/or nesting, breeding efforts and success, largely due to the high potential for flushing birds off of nests if birds become scared from the construction noise or presence of people and/or vehicles/equipment nearby. If birds are currently nesting and feel threatened by the presence of construction, this may cause them to abandon their nests, leaving the eggs or young behind. Nesting birds, their active nests, eggs, and chicks are protected under the Migratory Bird Treaty Act (MBTA). Construction related actions that resulted in the take of birds, eggs, chicks or nests would be a violation of the MBTA. Clearing of dense native vegetation or those areas supporting nesting birds during the nesting season could result in a significant impact under CEQA. Disturbances from construction could result in nest, roost, or territory abandonment and subsequent reproductive failure if these disturbances were to occur during an affected species' breeding seasons.

BIO-8 Mitigation Measure: Avoid nesting season and limit disturbance of nesting birds (non-raptor species).
LADWP shall conduct pre-construction surveys for nesting birds if construction and removal activities are scheduled to occur during the breeding season. Surveys shall be conducted in areas within 500 feet of tower sites, laydown/staging areas, substation sites, and access/spur road locations, or any other area subject to ground disturbance. Surveys for birds shall be conducted for all areas from February 1 to August 15. The required survey dates may be modified based on local conditions (e.g., high altitude locations) with the approval of the CDFG and/or USFS. LADWP shall be responsible for designating qualified biologists who can conduct pre-construction surveys and monitoring for breeding birds. The résumé of the proposed biologists will be provided to the USFS for concurrence before ground disturbance.

If breeding birds with active nests are found, a biological monitor shall establish a 300-foot buffer around the nest for ground-based construction activities and a one-mile buffer for helicopter use if helicopters are flying below 300 feet, and no activities will be allowed within the buffer(s) until the young have fledged from the nest or the nest fails. If nesting bald or golden eagles are identified, a 660-foot no activity buffer will be implemented. The 300-foot (or 660-foot eagle and one-mile helicopter) buffer may be adjusted to reflect existing conditions, including ambient noise, topography, and disturbance with the approval of the USFWS, CDFG, or USFS, as appropriate and in coordination with LADWP. On NFS lands, the USFS shall have the authority to define/redefine such buffers. The biological monitors shall conduct regular monitoring of the nest to determine success/failure and to ensure that Project activities are not conducted within the buffer(s) until the nesting cycle is complete or the nest fails.

The biological monitors shall be responsible for documenting the results of the surveys and the ongoing monitoring and will provide a copy of the monitoring reports for impact areas to the respective agencies (e.g., on NFS lands documentation will be provided to the Forest Biologist). If for any reason a bird nest must be removed during the nesting season, LADWP shall provide written documentation providing concurrence from the USFWS and CDFG authorizing the nest relocation. On NFS lands, this will include coordination and written approval from the USFS. LADWP shall provide a written report documenting the relocation efforts. The report shall include what actions were taken to avoid moving the nest, the location of the nest, what species is being relocated, the number and condition of the eggs taken from the nest, the location of where the eggs are incubated, the survival rate, the location of the nests where the chicks are relocated, and whether the birds were accepted by the adopted parent.

BIO-9 Wildlife Impact: The Project could potentially affect wildlife movement corridors and disturb wildlife movement.

In some areas, disturbance could also result in fragmentation of existing vegetation communities/habitats. Fragmentation occurs whenever a large continuous habitat is transformed into smaller patches that are isolated from each other by both natural and human-induced mechanisms. The changed landscape functions as a barrier to dispersal for species associated with the original vegetation community habitat. These smaller and more isolated habitats also support smaller populations, which are more vulnerable to local, stochastic extinction events, thereby causing smaller, more isolated habitats that ultimately contain few species and lower biodiversity.

The Project could potentially indirectly impact species utilizing the corridor during construction. This would include noise and increased human activities during construction. It would result in limited effect to the corridor during operation and maintenance of the facility. Implementation of the proposed Project would temporarily interfere or impede movement of native resident or migratory wildlife species. The proposed Project would not result in significant adverse interference with wildlife movement, or with the established wildlife corridor.

Project activities are not expected to significantly impact or restrict wildlife movement. Movement of most mammal and reptile species takes place at night, and nighttime vehicle traffic associated with Project construction activities will be kept to minimum volume and speed to prevent mortality of nocturnal wildlife species that may be moving about. Due to the linear, spread-out nature of the Project, temporary impacts to native habitats at each structure location would be relatively small, allowing wildlife to move freely around any Project equipment within the transmission corridor. Any temporary impacts that may occur to wildlife species are not expected to reduce the wildlife populations within or adjacent to the Project area below self-sustaining levels; therefore, these impacts to wildlife corridors are considered less than significant under CEQA and no mitigation is required.

Helicopter sites would eliminate the need for new access roads to tower locations, reducing the amount of habitat loss that would occur due to road grading, crane pads, and laydown areas. However, helicopter construction would still require portable landing pads, helicopter fly yards/staging areas and associated access roads, vegetation clearing at tower sites, guard structures, and access road pullouts. While the typical foundations for tower legs would typically be four feet in diameter and inserted at a depth of 21 to 25 feet, the micropile foundations for helicopter-constructed towers would consist of three to eight casings from six to nine inches in diameter and inserted from one to eight feet into the ground. Micropile foundations would require less disturbance and could be built without the use of heavy equipment necessary for traditional tower leg construction. Because heavy equipment would not be required, construction of access roads and subsequent vegetation removal, habitat fragmentation, and wildlife displacement would not occur in the same magnitude as if access roads were being graded through the same areas, although temporary wildlife displacement is likely to occur due to the noise and presence of the helicopter.

BIO-10 Wildlife Impact: The proposed Project may result in edge-associated impacts.

Any project which seeks to remove or modify an area of naturally occurring habitat is considered likely to result in edge-associated impacts as a new boundary is established within an existing area of habitat, resulting in change for the remaining habitat. For a transmission easement, this often cumulates in a new vegetation community being created and maintained, typically in an early succession stage of grasses and low shrubs. The new edge may be affected in two ways, broadly described here as abiotic and biotic effects (Murcia 1995). Abiotic effects include increased light levels, greater wind speeds and increased oil temperatures and, in areas adjacent to agricultural land, there may be changes in the nutrient status of the soil (Goosem 2004). Biotic factors relate to changes in biota including species tenure, composition, and abundance, where those species favored by disturbance increases at the expense of those less tolerant. Biota may respond to the abiotic factors themselves or a particular species may favor the association of the two different habitat types. Hard edges, such as those normally associated with transmission easements, railway and road corridors, may promote access by predators and competitors of resources, particularly edge-tolerant exotics. For some species, the increase in vulnerability may lead to an eventual decline in their abundance near the edge (Yahner 1988, Marini et al. 1995). However, construction areas on NFS lands that are not absolutely essential to continued maintenance of the transmission line will likely be restored and revegetated, reducing the likelihood of extensive spread of nonnative species around these areas. Areas to be restored and revegetated will include the spur roads, pulling and tensioning sites, and access roads that were only needed for initial construction.

Considering the implications of the above, the Project will largely traverse existing easements. Given that most of the field surveys were undertaken within this edge habitat or a short distance away from it, the data suggests that those species recorded should continue to inhabit the adjoining lands. The same cannot be said for Segment C, where there is no current transmission line or easement. Any temporary impacts that may occur to wildlife species are not expected to reduce the wildlife populations within or adjacent to the Project area below self-sustaining levels; therefore, these impacts to wildlife corridors are considered less than significant under CEQA.

Helicopter sites would eliminate the need for new access roads to tower locations, reducing the amount of habitat loss that would occur due to road grading, crane pads, and laydown areas. However, helicopter construction would still require portable landing pads, helicopter fly yards/staging areas and associated access roads, vegetation clearing at tower sites, guard structures, and access road pullouts. While the typical foundations for tower legs would typically be four feet in diameter and inserted at a depth of 21 to 25 feet, the micropile foundations for helicopter-constructed towers would consist of three to eight casings from six to nine inches in diameter and inserted from one to eight feet into the ground. Micropile foundations would require less disturbance and could be built without the use of heavy equipment necessary for traditional tower leg construction. Because heavy equipment would not be required, construction of access roads and subsequent vegetation removal, habitat fragmentation, and wildlife displacement would not occur in the same magnitude as if access roads were being graded through the same areas, although temporary wildlife displacement is likely to occur due to the noise and presence of the helicopter. Edge-associated impacts are expected to be reduced in areas where helicopter mitigation will occur due to the relative minimization of new boundaries being created.

BIO-11 Wildlife Impact: The proposed Project may result in the electrocution of wildlife species and tower/line collisions

Electrocution. Raptors and other large aerial perching birds are most susceptible to electrocutions because of their size, distribution, and behavior (Olendorff et al. 1981, Avian Power Line Interaction Committee [APLIC] 2006, Sergio et al. 2005). Electrocution may take place when a bird touches two phase conductors or one conductor and a grounded device simultaneously, especially when the feather area is wet (Bevenger 1998). Hence, body size and behavior, such as perching and roosting on poles or wires, are the keys to understanding why and how birds become electrocuted. Species frequently affected by electrocution particularly seem to involve birds of prey, ravens, and thermal soarers (Bevenger 1998).

The electrical design factor most crucial in avian electrocutions is the physical separation between energized and/or grounded structures, conductors, hardware, or equipment that can be bridged by birds to complete a circuit (APLIC 2006). The proposed Project would meet minimum clearance guidelines between phase conductors or between phase conductors and grounded hardware, as recommended by APLIC (2006), that is sufficient to protect even the largest birds, such as California condor, and therefore would present little to no risk of bird electrocution. The majority of raptor electrocutions are caused by distribution lines that are energized at voltage levels between 1 kV and 69 kV and "the likelihood of electrocutions occurring at voltages greater than 69 kV is extremely low" (APLIC 2006).

Electrocution of non-avian species is a rare occurrence and usually occurs at substations rather than in association with transmission lines. Best Management Practices, such as fencing, will be utilized to prevent non-avian species from entering the substation boundaries. Wildlife species capable of climbing are most likely to be affected. The infrequent electrocution of other wildlife species would not be considered significant under CEQA; therefore, the residual impact would be reduced to a level of insignificance.

Collision. Factors that influence collision risk can be divided into three categories: those related to avian species, those related to the environment, and those related to the configuration and location of transmission lines (APLIC 2006). Species-related factors include habitat use, body size, flight behavior, age, sex, and flocking behavior. In general, ecologically sensitive areas such as wetlands should be avoided. Wetlands tend to have a high concentration of birds nesting, feeding, roosting, and migrating back and forth, and add to the collision risk if transmission lines are nearby (Bevanger 1994). Areas within the range of special-status species with a high documented collision risk, such as the California condor, should also be avoided. A total of seven deaths from 1993 to 2001 have been reported by USFWS (2009d) as a result of collision with transmission lines. These mortalities were determined to be caused by collision with transmission lines by injury characterization (as determined by necropsy) and proximity to transmission lines. One of these deaths occurred at an existing line that would be adjacent and parallel to the proposed Segment J at Castaic Dam (Gibson 1993).

Many birds, especially raptors, will use transmission poles and towers as perches. This can conserve energy by lowering the amount of time dedicated to flying as the birds search for prey below (APLIC 2006). Bird species which spend an abundance of time in the air may face a greater risk than those which are predominantly ground-based (Bevanger 1994). For example, predators which fly at high speeds when tracking prey, such as peregrine falcons or goshawks (*Accipiter gentilis*), are more likely to collide with a power line. A bird's flight performance has been shown to be one of the most important factors determining the chances of collision with a transmission line, perhaps more important than the sheer frequency of birds flying near the lines (Janss 2000). Juvenile birds, which are not as familiar with the surrounding area and are less experienced in both flight and, in the case of raptors, hunting methods, can be expected to have greater likelihoods of colliding with transmission lines (Bevanger 1994, Bevanger 1998, Dorin and Spiegel 2005). However, larger birds, such as the California condor, also tend to be more likely to collide with power lines.

Environmental factors influencing collision risk include the effects of weather and time of day for transmission line visibility, surrounding land use practices that may attract birds and human activities that may flush birds into transmission lines. Line-related factors include the configuration and location of the transmission line and transmission line placement with respect to other structures or topographic features.

Bird collisions also tend to occur with transmission lines when migrant species travel at reduced altitudes and encounter tall structures (e.g., transmission lines and towers) in their path. It is difficult to predict the magnitude of collision-caused bird mortality without extensive information on bird species and movements in the Project vicinity. This data is not available for the proposed transmission line study area; however, it is generally expected that collision mortality would be greatest where the movements of susceptible species are the greatest (e.g., near open bodies of water, wetlands, ridge lines, etc.), such as the San Francisquito Creek. A portion of this area currently supports existing transmission lines. It is possible that birds would strike the new transmission lines; however, it is not expected to result in a substantial increase from current conditions due to preexisting transmission lines within the same area. Therefore, the addition of the new 230 kV transmission line would be considered a less than significant impact according to CEQA and no mitigation is required.

Increased Predation. Impacts could occur from increased raptor predation within the areas surrounding the support structures. In areas where suitable habitat is within view, perch sites can provide an energy efficient method for hunting. There is the concern that raptors may use the horizontal cross arms of H-frame transmission structures or single pole structures as perches while scouting for food.

BIO-11 Mitigation Measure: Reduce avian electrocutions/collisions on transmission lines.
Raptor safety protection will be required on tower/conductor (lines) in appropriate locations. The Project would have minimum clearance between phase conductors or between phase conductors and grounded hardware, as recommended by the Avian Power Line Interactive Committee (APLIC 2006), that are sufficient to protect even the largest birds, such as California condor, and therefore would present little to no risk of bird electrocution.

New Project structures shall be designed to implement collision-reducing techniques as described in the latest version of the APLIC guidelines. Devices such as swan wrapping or other similar functioning devices may be required if areas are identified as being a hazard to birds. In addition, per General Practice (GP) 8, an Avian Protection Plan will be developed for this Project that will include avian collision protocols.

BIO-12 Wildlife Impact: Indirect impacts to wildlife species

Potential indirect impacts from Project construction could result from fugitive dust, human activity, decreased water quality (through sedimentation, urban contaminants, or fuel release, for example), and construction noise. Indirect impacts that do not require development of additional mitigation due to existing mitigation measures and GPs include fugitive dust, human activity, water quality, and construction noise.

Fugitive Dust. Fugitive dust produced by construction has the potential to disperse onto vegetation which may reduce the overall vigor of individual plants by reducing their photosynthetic capabilities and increasing their susceptibility to pests or disease. This in turn could affect animals dependent on these plants (e.g., seed-eating rodents). Fugitive dust also may make plants unsuitable as habitat for insects and birds. These potential impacts would be minimized through GPs (Table 15), which require that active construction areas and unpaved surfaces would be watered to minimize dust generation. Therefore, the indirect impacts of dust generation on biological resources would be less than significant under CEQA. Refer to the BIO-1 for discussion of indirect effects to plant species.

Human activity. There would be a potentially large temporary increase in human activity during all phases of the construction process, including heavy equipment, crew vehicles, and crew on foot. The number of vehicle trips in and out of a given area, along with individual tower construction time, is unknown and is subject to various factors such as environmental conditions (i.e., presence of sensitive wildlife, plants, or habitat), or weather conditions. The level of human activity would likely decrease during revegetation, dependent on final revegetation plans.

Water Quality. Water quality in riparian areas could be adversely affected by surface runoff and sedimentation during construction. The use of petroleum products (e.g., fuels, oils, lubricants) and erosion of cleared land during construction could contaminate surface water. In addition, there is a potentially higher than normal risk of surface runoff and erosion in portions of the Project area due to recent fires such as the 2008 South Fire in the unincorporated community of Green Valley near Segment G (GeoMAC 2009). This may result in sediment deposition into streambeds, affecting water quality and habitat for any resident species, including special-status species which may be present. Decreased water quality may adversely affect the vegetation, aquatic animals, and terrestrial wildlife that depend on these resources. The potential impacts would be minimized through GPs, such as the spill prevention countermeasures and control plan, design measures and compliance with applicable permitting requirements. LADWP would have to acquire the appropriate stormwater permits through the Regional Water Quality Control Board. As such, these impacts would be less than significant under CEQA.

6.3 SPECIAL-STATUS SPECIES

6.3.1 Plants

BIO-13 Special-Status Species Impact: The proposed Project could adversely affect special status plants

Six State or federally listed or proposed plant species have the potential to occur in the proposed Project area. These include the federally listed Braunton's milkvetch, Nevin's barberry, thread leaved brodiaea, slender-horned spineflower; California orcutt's grass, and the federal candidate species San Fernando Valley spineflower (also State-listed endangered). Critical habitat has been designated for one of these plant species: Nevin's barberry (73 FR 8412 8440). However, the proposed Project is not located in critical habitat for any of these species.

Seventy-one USFS/BLM Sensitive and Watch, and CNPS listed species have the potential to occur in areas of suitable habitat in the Project area. Table 8 presents the special-status plants that may occur within the proposed Project and the vegetation communities in which they may be found. Focused plant surveys were conducted in the spring/summer of 2008, 2009 and 2010 where right-of-way permission was granted. Based on survey data and known ranges and population locations, Project construction is not expected to adversely affect a federal- or-state protected plant species, but is expected to negatively impact multiple USFS Sensitive populations. However, because final engineering has not been completed by LADWP most disturbance locations including possible pulling sites, tower locations, or helicopter landing sites have not been surveyed, therefore making it impossible to predict how many populations may end up being impacted.

Direct impacts to listed plant species could occur from construction activities that remove vegetation, grade soils, or cause sedimentation, including tower pad preparation, clearing helicopter staging areas, and the construction, grading, and widening of new spur roads and existing access roads. Indirect impacts could include the disruption of native seed banks through soil alterations, the accumulation of fugitive dust, increased erosion and sediment transport, and the colonization of non-native, invasive plant species. Operational impacts could include trampling or crushing due to public use of new or improved spur roads and access roads, increased erosion, and the spread and colonization of noxious weeds.

Helicopter sites would eliminate the need for new access roads to tower locations, reducing the amount of habitat loss that would occur due to road grading, crane pads, and laydown areas. However, helicopter construction would still require portable landing pads, helicopter fly yards/staging areas and associated access roads, vegetation clearing at tower sites, guard structures, and access road pullouts. While the typical foundations for tower legs would typically be four feet in diameter and inserted at a depth of 21 to 25 feet, the micropile foundations for helicopter-constructed towers would consist of three to eight casings from six to nine inches in diameter and inserted from one to eight feet into the ground. Micropile foundations would require less disturbance and could be built without the use of heavy equipment necessary for traditional tower leg construction. Because heavy equipment would not be required, construction of access roads and subsequent vegetation removal, habitat fragmentation, spread of non-native weed species, and potential loss of special-status species would not occur in the same magnitude as if access roads were being graded through the same areas.

Even with implementation of the GPs, the Proposed Project would impact special status plant species. This impact is considered significant under CEQA; however, it can be reduced to a level of less-than-significant with the incorporation of the following mitigation actions.

BIO-13 Mitigation Measure: Protect special-status plant species and their habitat

13a. Conduct preconstruction surveys for State and federal Threatened, Endangered, Proposed, Petitioned, Candidate, USFS Sensitive, USFS Watch, BLM Sensitive, and California Native Plant Society (CNPS) listed plants and avoid any occurrences of these plants. LADWP shall conduct pre-construction surveys for State and federally listed Threatened and Endangered, Proposed, Petitioned, and Candidate plants in a 250-foot radius around all areas subject to ground-disturbing activity, including, but not limited to, tower pad preparation and construction areas, tower removal sites, pulling and tensioning sites, assembly yards, and areas subject to grading for new access roads. The surveys shall be conducted during the appropriate blooming period(s) by a qualified plant ecologist/biologist according to protocols established by the USFWS, CDFG, USFS, BLM, and CNPS. The résumé of the proposed biologists will be provided to the USFS and BLM for concurrence before ground disturbance. The completion of these surveys shall be coordinated with the federal land manager. All listed plant species found shall be marked and avoided. If a federally listed plant species cannot be avoided on private land, consultation with USFWS will occur.

13b. Before site grading, any populations of listed plant species identified during the surveys shall be protected by a buffer zone. The buffer zone shall be established around these areas and shall be of sufficient size to eliminate potential disturbance to the plants from human activity and any other potential sources of disturbance, including human trampling, erosion, and dust. The size of the buffer will depend upon the proposed use of the immediately adjacent lands, and include consideration of the plant's ecological requirements (e.g., sunlight, moisture, shade tolerance, edaphic physical and chemical characteristics) that are identified by a qualified plant ecologist and/or Forest botanist. At minimum, the buffer shrub species shall be equal to twice the drip line (i.e., two times the distance from the trunk to the canopy edge) to protect and preserve the root systems of the plant. The buffer for herbaceous species shall be, at minimum, 50 feet from the perimeter of the population or the individual. A smaller buffer may be established, provided there are adequate measures in place to avoid the take of the species, with the approval of the USFWS, CDFG, USFS, and BLM and in coordination with LADWP. If impacts to listed plants are determined to be unavoidable, the USFWS shall be consulted for authorization, through the context of a Biological Opinion. Additional mitigation measures to protect or restore listed plant species or their habitat may be required by the USFWS before impacts are authorized, whichever is appropriate.

13c. Impacts to non-listed plant species (i.e., USFS Sensitive, CNPS List 1,2 and 4 species) shall first be avoided where feasible, and, where not feasible, impacts shall be compensated through reseeding (with locally collected seed stock), or other USFS or BLM approved methods. For USFS lands, if the ANF determines Project activities will result in the loss of a significant portion of the known individuals of USFS Sensitive plant species, and reseeding/transplanting are not feasible options, LADWP shall preserve existing off-site occupied habitat that is not already part of the public lands in perpetuity at a 2:1 mitigation ratio (habitat preserved: habitat impacted).This ratio will apply only to specific acreage inhabited by special-status plant species that are removed during construction, and will supersede ratios listed in Table BIO-MM-1 regardless of habitat type. The determination of a significant rare plant population loss will be decided by the ANF botanist on a species and location basis, after available literature, research, and overall species distribution are reviewed. If avoidance, reseeding/transplanting, and, preservation of off-site habitat occupied by the impacted species are not found to be possible, the ANF will consider off-site restoration of degraded ANF lands and/or preservation of non-public lands with suitable habitat for the impacted species. The preserved habitat shall be of superior or similar habitat quality to the impacted areas in terms of soil features, extent of disturbance, habitat structure, and dominant species composition, as determined by a qualified plant ecologist.

13d. All special-status plant species impacted by Project activities shall be documented in an annual report and submitted to the federal land manager (USFS and BLM) until the success criteria outlined in the Habitat Restoration Plan are met. Where reseeding has occurred, LADWP shall track the success of the plants during the course of the annual restoration monitoring. This information shall be submitted as part of the annual report to the federal land manager (USFS and BLM).

6.3.2 Birds

BIO-14 Special-Status Species Impact: The proposed Project may impact the western yellow-billed cuckoo, southwestern willow flycatcher, and least Bell's vireo.

The southwestern willow flycatcher and least Bell's vireo are listed as federal and state endangered species, while the western yellow-billed cuckoo is listed as state endangered and federal candidate. The avian species are associated with riparian habitats (i.e., Riparian and Cottonwood/Willow Woodland). Direct and indirect impacts could occur to these species during Project activities. It is possible that the proposed Project may have short-term indirect effects on these bird species during the construction of the new transmission line. Indirect impacts could also occur from clearing and grading for new tower locations. Helicopter sites would eliminate the need for new access roads to tower locations, reducing the amount of habitat loss that would occur due to road grading, crane pads, and laydown areas. However, helicopter construction would still require portable landing pads, helicopter fly yards/staging areas and associated access roads, vegetation clearing at tower sites, guard structures, and access road pullouts. While the typical foundations for tower legs would typically be four feet in diameter and inserted at a depth of 21 to 25 feet, the micropile foundations for helicopter-constructed towers would consist of three to eight casings from six to nine inches in diameter and inserted from one to eight feet into the ground. Micropile foundations would require less disturbance and could be built without the use of heavy equipment necessary for traditional tower leg construction. Because heavy equipment would not be required, construction of access roads and subsequent vegetation removal, habitat fragmentation, and wildlife displacement would not occur in the same magnitude as if access roads were being graded through the same areas, although temporary wildlife displacement is likely to occur due to the noise and presence of the helicopter. Short-term indirect impacts may include temporary dispersal of these species from the area due to construction noise or a temporary reduction in foraging territory, both of which may cause the species to move to a less-than-ideal new area until construction is finished. The removal of vegetation from these areas could result in the loss of forage and cover for the species. This impact could be considered significant under CEQA; however, it can be reduced to a level of less-than-significant with the incorporation of the following mitigation actions.

BIO-14 Mitigation Measure: Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat.

14a. All Project activities taking place within suitable habitat for the western yellow-billed cuckoo, southwestern willow flycatcher, and least Bell's vireo shall be conducted from November through early March, which is a period outside their breeding seasons (Sedgwick 2000, Sogge 2000, Brown 1993, Kus 2002, Hughes 1999). If these activities cannot be avoided during the breeding season, the following measures shall apply:

14b. If construction activities must occur during the breeding season in areas that have the potential to support listed riparian species, a qualified ornithologist shall conduct protocol surveys of the Project and adjacent areas within 500 feet to determine if this species is present within the area and to determine breeding status. USFWS protocol surveys will be conducted for southwestern willow flycatcher, least Bell's vireo, and western yellow-billed cuckoo (if no protocols exist, the appropriate land management agency will establish the protocols to be used). In known occupied habitat for listed riparian birds, LADWP shall only conduct focused surveys of the Project and adjacent areas within 500 feet. The surveys shall be of adequate duration to verify potential nest sites if work is scheduled to occur during the breeding season. If breeding is confirmed, the USFWS-recommended buffers will be applied and no activities will occur within that buffer.

14c. Protocol or focused surveys, as appropriate, should be conducted within one year of start of construction. However, on NFS lands, annual surveys in suitable habitat may be required during construction. These surveys may be modified through the coordination with the USFWS, CDFG, USFS, LADWP and the BLM based on the condition of habitat, the observation of the species, or avoidance of riparian areas during the breeding season.

14d. If a territory or nest is confirmed, the USFWS and CDFG shall be notified immediately. On NFS or BLM lands, these agencies would be notified immediately. In coordination with the USFWS, CDFG and the appropriate land management agency, a 300-foot disturbance-free buffer shall be established and demarcated by fencing or flagging. This buffer may be adjusted, provided noise levels do not exceed 60 dB(A) hourly Leq at the edge of the nest site as determined by a qualified biologist in coordination with a qualified acoustician. If the noise meets or exceeds the 60 dB(A) Leq threshold, or if the biologist determines that the construction activities are disturbing nesting activities, the biologist shall notify the construction manager, and the construction manager, in consultation with the biologist and USFS, has the authority to halt the construction and shall devise methods to reduce the noise and/or disturbance in the vicinity. This may include methods such as, but not limited to, turning off vehicle engines and other equipment whenever possible to reduce noise, installing a protective noise barrier between the nest site and the construction activities, and working in other areas until the young have fledged. If noise levels still exceed 60 dB(A) Leq hourly at the edge of nesting territories and/or a no-construction buffer cannot be maintained, construction shall be deferred in that area until the nestlings have fledged. All active nests shall be monitored on a weekly basis until the nestlings fledge. No construction or vehicle traffic shall occur within this buffer during the breeding season for these species.

14e. The nest must be monitored by a qualified biologist during the construction activities. If the monitor determines that Project activities are disturbing or disrupting nesting activities, the monitor shall notify the construction manager, and the construction manager, in consultation with the biological monitor, has the authority to implement measures to reduce the noise and/or disturbance in the vicinity.

BIO-15 Special-Status Species Impact: Construction and operation of the transmission line may impact the coastal California gnatcatcher.

Impacts to the coastal California gnatcatcher could occur if an active nest is present within coastal sage scrub that is crushed or graded during construction. Tower construction and grading of new and existing access roads would result in habitat and vegetation loss, as well as possible injury or mortality. Because tree trimming is a possibility to allow vehicles and equipment to pass without causing damage to trees by breaking branches, this will result in an unknown amount of habitat loss and possibly injury or mortality of adults or young. Mitigation measure BIO-8 is expected to help reduce the possibility of direct injury or mortality through preconstruction/protocol surveys for birds or nests. Further habitat degradation may occur through the deposition of dust or other contaminants onto leaves, which can reduce their vigor and reduce habitat quality in the area. Dust control measures will be implemented to help reduce this impact. Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area which may leave them open to predation. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat which could lead to reduced fitness of individuals. Furthermore, because nesting may occur outside of the official agreed-upon nesting season, if construction approaches any undetected nests with eggs or young, the disturbance may cause the adult(s) to abandon the nest. These impacts are potentially significant under CEQA and the mitigation below is recommended to reduce impacts to less-than-significant levels.

BIO-15 Mitigation Measure: Protect coastal California gnatcatcher and its habitat.

15a. All Project activities taking place within suitable habitat for the coastal California gnatcatcher shall be conducted from September through February, which is outside their breeding season. If these activities cannot be avoided during the breeding season, the following measures shall apply:

15b. LADWP shall conduct protocol surveys for coastal California gnatcatchers in areas supporting coastal sage scrub habitat that may be affected by the Project. In known occupied habitat for the California gnatcatcher, LADWP shall only conduct focused surveys for coastal California gnatcatchers. Survey areas shall include a 500-foot buffer around Project disturbance areas.

15c. If a territory or nest is confirmed, the USFWS shall be notified immediately; on NFS or BLM lands, these agencies would also be notified immediately. In coordination with the USFWS and the appropriate land management agency, a 300-foot disturbance-free buffer shall be established and demarcated by fencing or flagging. This buffer may be adjusted, provided noise levels do not exceed 60 dB(A)hourly Leq at the edge of the nest site as determined by a qualified biologist in coordination with a qualified acoustician. If the noise meets or exceeds the 60 dB(A) Leq threshold, or if the biologist determines that the construction activities are disturbing nesting activities, the biologist shall notify the construction manager, and the construction manager, in consultation with the biologist, has the authority to halt the construction and shall devise methods to reduce the noise and/or disturbance in the vicinity. This may include methods such as, but not limited to, turning off vehicle engines and other equipment whenever possible to reduce noise, installing a protective noise barrier between the nest site and the construction activities, and working in other areas until the young have fledged. If noise levels still exceed 60 dB(A) Leq hourly at the edge of nesting territories and/or a no-construction buffer cannot be maintained, construction shall be deferred in that area until the nestlings have fledged. All active nests shall be monitored on a weekly basis until the nestlings fledge. No Project activities may occur in these areas unless otherwise authorized by USFWS. LADWP shall obtain incidental take authorization from the USFWS before further activities.

15d. Protocol or focused surveys, as appropriate, shall be conducted, at a minimum, within one year of start of construction. These surveys may be modified through the coordination with the USFS, BLM, and CDFG based on the condition of habitat, the observation of the species, or avoidance of nesting areas during the breeding season.

15e. Construction activities in occupied gnatcatcher habitat will be monitored by a full-time qualified biologist. The monitoring shall be of a sufficient intensity to ensure that the biologist could detect the presence of a bird in the construction area. At a minimum, one full-time monitor shall be present for every two miles of active construction within occupied habitat. The monitors shall notify the construction manager, and the construction manager. in consultation with the biologist, will have the authority to halt all activities until appropriate corrective measures have been completed.

BIO-16 Special-Status Species Impact: The proposed Project could adversely affect the burrowing owl.

The burrowing owl is a year-long resident of open, dry grassland and desert habitats. It is also found as a resident in grass, forb, and open shrub stages of pinyon-juniper as well as agricultural lands. The burrowing owl is migratory over much of its range even in southern California (Unitt 2004).

The burrowing owl numbers have been markedly reduced in California for at least the past 60 years. Conversion of grasslands, other habitat destruction, and poisoning of ground squirrel have contributed to the reduction in numbers in recent decades. Within the past 20 years, however, and particularly within the past five years, the decline of burrowing owls in California appears to have greatly accelerated. Apparently, this has resulted because of habitat loss caused by increased residential and commercial development (Shuford and Gardali 2008).

Although the burrowing owl is not federal- or-state listed, the CDFG requires surveys and mitigation for this declining species, which it considers a Species of Special Concern. Although potential habitat is within the proposed Project area, no burrowing owls were detected during the desert habitat assessment (POWER 2008a). Direct impacts to this species could occur from the removal of active burrows and direct mortality of owls during Project activities. Indirect impacts could occur from increased noise, lighting, and dust during construction. Although this species is not currently listed by federal agencies, it is a state species of special concern and impacts to this species would be significant under CEQA because the CDFG (Assembly Bill 3180) requires mitigation measures for this species according to currently accepted protocols. Preconstruction surveys will be performed in accordance with the accepted CDFG Burrowing Owl Guidelines.

BIO-16 Mitigation Measure: Protect burrowing owl.
The following measures are proposed to minimize the potential for take of burrowing owl nests during construction associated with the proposed Project.

16a. Preconstruction surveys will be conducted throughout the Project site and laydown areas for burrowing owls, possible burrows, and sign of owls (e.g., pellets, feathers, white wash).

16b. Occupied burrows will not be disturbed during the breeding season (February 1 through August 31) unless an approved biologist verifies, through non-invasive methods, that both 1) the birds have not begun egg-laying and incubation, and 2) that juveniles from the occupied burrow are foraging independently and are capable of independent survival.

16c. Occupied burrows will be protected with a 600-foot buffer, if possible.

16d. When the destruction of an occupied burrow is unavoidable, the owl(s) will be passively relocated in accordance with the CDFG memo dated October 17, 1995. Relocation efforts will occur at least one week before ground disturbance of the area. A biologist will monitor the success of the relocation. A monitoring plan will be submitted to and approved by CDFG and BLM.

16e. Off-site mitigation will be pursued to enhance existing habitat in the region or fund research into the species to enhance survivorship of the species in the region.

BIO-17 Special-Status Species Impact: The proposed Project may impact the bald eagle and golden eagle

The bald eagle and golden eagle have the potential to occur in the study area. The removal of vegetation from these areas could result in the loss of forage and cover for the species. This impact could be considered significant under CEQA; however, it can be reduced to a level of less-than-significant with the incorporation of the following mitigation measures.

The golden eagle and bald eagle are very sensitive to human activity, especially in the vicinity of nesting area(s), and even distant construction activity (or maintenance activity) could cause abandonment of a nest, subsequent failure, and continuing decline of the species. Human activity within ½ mile of a nest site is considered significant and not mitigable to less-than-significant levels, especially if there is direct line-of-sight between the nest site and the human activity, or if the human activity occurs above the nest site in elevation (USFWS 2007). Exceptions to this are if the activity within 660 feet of the nest site (without direct line-of-sight and activity is below the nest site) occurs where there is already an existing disturbance, such as a highly utilized road or utility corridor with existing large structures, or if the project is underground. In areas where helicopters will be used for construction and maintenance, a 1,000 feet buffer should be maintained from nests.

Suitable bald eagle nesting and foraging habitat within the Project Area is relatively low, as is suitable golden eagle habitat. Bald eagles typically prefer large, open bodies of water with coniferous habitat that they can nest in (Buehler 2000). Open bodies of water in the general Project vicinity include Bouquet Reservoir, Castaic Lake and Castaic Lagoon, Pyramid Lake, and Elizabeth Lake, and Quail Lake. While these areas may present suitable foraging habitat for the bald eagle, they are not expected to be directly affected by construction. However, although these are all areas that are in the general vicinity of high human activity, the added noise and focused human presence associated with the Project's construction near water bodies may disrupt foraging activities of this species if individual bald eagles are present. In addition to fish and waterfowl, two staples of bald eagle diets, bald eagles will also forage on small mammals (Buehler 2000). Construction of the Project may temporarily reduce mammal prey availability in the construction area if they avoid the construction activity. Golden eagles in California typically nest in open grasslands or oak savannas, and will also use, to a less frequent extent, oak woodlands and open shrublands (Kochert et al. 2002). Much of the Project area within the ANF consists of shrublands interspersed with patches of grassland, with a higher concentration of grasses north of the ANF eventually converting back into shrubland continuing to the northern terminus of the Project. While golden eagles are considered uncommon in eastern Kern County in the area surrounding Edwards Air Force Base (Department of Defense n.d.), their potential occurrence within the Project area during construction would be disturbed by construction activity. Golden eagles typically feed on small and medium-sized mammals such as ground squirrels and rabbits (Kochert et al. 2002). Construction in the northern portion of the Project area would have a potential effect on prey species within the impact area, as it would potentially cause prey to remain hidden during diurnal hours for the duration of construction in given areas, or cause prey to vacate or become hurt or killed due to construction activities.

Certain areas within the ANF would require helicopter construction, which may reduce impacts disturbance to these species and their habitat. Helicopter sites would eliminate the need for new access roads to tower locations, reducing the amount of habitat loss that would occur due to road grading, crane pads, and laydown areas. However, helicopter construction would still require portable landing pads, helicopter fly yards/staging areas and associated access roads, vegetation clearing at tower sites, guard structures, and access road pullouts. While the typical foundations for tower legs would typically be four feet in diameter and inserted at a depth of 21 to 25 feet, the micropile foundations for helicopter-constructed towers would consist of three to eight casings from six to nine inches in diameter and inserted from one to eight feet into the ground. Micropile foundations would require less disturbance and could be built without the use of heavy equipment necessary for traditional tower leg construction. Because heavy equipment would not be required, construction of access roads and subsequent vegetation removal, habitat fragmentation, and wildlife displacement would not occur in the same magnitude as if access roads were being graded through the same areas, although temporary wildlife displacement is likely to occur due to the noise and presence of the helicopter. In areas where helicopter construction is used, appropriate mitigation and protocols would be used to minimize effects to these species.

Where human activity agitates or bothers roosting or foraging bald eagles to the degree that causes injury or substantially interferes with breeding, feeding, or sheltering behavior and causes, or is likely to cause, a loss of productivity or nest abandonment, the conduct of the activity constitutes a violation of the Eagle Act's prohibition against disturbing eagles (USFWS 2007).

BIO-17 Mitigation Measures: Protect the bald eagle and golden eagle.

17a. If construction occurs during bald eagle and golden eagle breeding season, preconstruction surveys shall be conducted, in accordance with USFWS protocol requirements, for the Project area in regions with suitable habitat. Any active nests shall have an appropriate exclusion buffer established. This buffer shall be established based on existing conditions in consultation with the LADWP, USFS, BLM, CDFG and/or USFWS.

17b. Whenever bald eagles and golden eagles are observed within 100 yards of the construction area, construction shall be halted and shall not resume until the eagles leave.

17c. If a helicopter will be used for construction or maintenance, the aircraft must be no closer than 1,000 feet vertical or horizontal distance from communal roost sites.

BIO-18 Special-Status Impact: The proposed Project may impact the California condor.

The California condor is known to occur within the study area (USFWS 2008b). Like most scavenging birds, California condors are opportunistic and therefore vulnerable to contaminants such as microtrash.

Adult condors are known during the breeding season to ingest microtrash which is subsequently regurgitated at the nest for their young; because the young cannot regurgitate the trash, it can accumulate in their stomachs and cause death (USFS 2008). California condors use topography, wind, and associated thermal weather patterns for flight. It has become apparent that California condors are highly dependent on topography. Construction of this project may result in a small reduction of foraging habitat, but because condors may fly up to 150 miles away to forage, it is not expected that construction impacts on habitat would significantly affect condor foraging habitat or abilities, particularly because most condor activity is concentrated south, southwest, and northwest of the Project area according to data supplied by USFWS (USFWS 2009d). There is no evidence to suggest that there are any California condor nests located within the Project area. However, with the activity within the project area and foraging habitat present there is a potential for roosting and suitable nesting habitat. Potential impacts could occur and the following mitigation measure would be applied to reduce potential impacts.

BIO-18 Mitigation Measure: Protect California condor.

18a. For all Project activities taking place immediately adjacent to or within known condor-occupied areas, a qualified biologist will monitor all construction activities and assist LADWP in the implementation of the monitoring program. The résumé of the proposed biologist(s) will be provided to the BLM and USFS for concurrence. This biologist(s) will be referred to as the authorized biologist hereafter. The authorized biologist will be present during all activities immediately adjacent to or within known condor-occupied areas. The authorized biologist shall notify the construction manager, and the construction manager, in consultation with the biologist, will have the authority to halt all activities until appropriate corrective measures have been completed. If condors are observed in helicopter construction areas, LADWP shall avoid further helicopter use until the animals have left the area. The authorized biologist will have radio contact with the Project foreman, who will be in radio contact with the helicopter pilot. The biologist will provide information to LADWP to avoid conflicts with condors. All condor sightings in the Project area will be reported to the USFWS and USFS (on NFS lands). LADWP will coordinate with USFWS on the construction schedule and helicopter work areas to determine if any condors have been tracked or observed in the vicinity of the Project area. If condors are observed in helicopter construction areas, LADWP shall avoid further helicopter use until the animals have left the area and the USFWS will be notified immediately. Should condors be found roosting within 0.5 mile of the construction area, no construction activity shall occur between one hour before sunset to one hour after sunrise, or until the condors leave the area. Should condors be found nesting within 1.5 miles of the construction area, no construction activity will occur until further authorization from the USFWS and USFS (on NFS lands).

18b. **Microtrash**. All trash is required to be disposed of as written in the Proper Disposal of Construction Waste Plan for the Project. Additional language has been added to this Plan to address the disposal of microtrash. Workers will be trained on the issue of microtrash – what it is, its potential effects to California condors, and how to avoid the deposition of microtrash. In addition, all workers will properly dispose of their trash throughout the day and daily sweeps of the work area will occur to collect and remove trash in locations with the potential for California condors to occur.

18c. **California Condor Worker Education Program**. LADWP will develop a flyer that will be distributed to all workers on the Project concerning information on the California condor. Information to be included consists of the following: species description with photos and/or drawings indicating how to identify the California condor and how to distinguish condors from turkey vultures and golden eagles; protective status and penalties for violation of the Endangered Species Act; avoidance measures being implemented on the Project; and contact information for communicating condor sightings.

18d. **Reporting.** All California condor sightings in the Project area will be reported directly to the USFWS, USFS, and BLM (as appropriate). Before commencement of helicopter activity, LADWP will coordinate with a USFWS condor biologist to determine if any condors have been tracked or observed in the vicinity of the Project area.

BIO-19 Special-Status Species Impact: The proposed Project may impact the California spotted owl.

The California spotted owl has the potential to occur in the study area within the Angeles National Forest. It is possible that the proposed Project may have direct and/or indirect effects on this species during construction of the new transmission line. Direct impacts include the possibility of injuries or mortalities resulting from removal of branches or other parts of suitable habitat as construction dictates. Other direct impacts include loss of nesting habitat due to equipment clearance needs, tower construction sites, equipment pulling and tensioning sites, and necessary construction on new or existing access roads; collisions with newly-constructed transmission lines; and disruption of breeding or foraging by construction presence.

Indirect effects to this species include habitat degradation as a result of dust, spread of invasive plant species, and potentially increased noise levels from the addition of a new transmission line. Construction equipment and vehicles have the potential to increase dust pollution without proper soil retention, such as from a water truck. Dust has the potential to accumulate on vegetation, reducing the leaves' photosynthetic efficiency and reducing plant vigor. Any earth-moving activity in general also has the potential to generate dust without proper moisture levels in the soil being moved. Equipment and vehicles can potentially spread non-native plant species if they are not properly washed before coming on-site. Seeds of invasive plant species may not travel only by wheels of equipment and vehicles, but may spread naturally by wind and deposit into the newly-disturbed bare ground, where there is not pre-existing native vegetation base above the surface. Transmission line noise, also known as corona noise, would be an ongoing effect, variable depending on weather and conductor conditions. Corona noise may have disturbing effects to breeding or otherwise active spotted owls.

Excessive construction noise or activities may also result in disturbance to adults and young to the extent that it causes abandonment of a nest, of eggs, or of the local habitat. In these situations incidental take may occur through the loss of a spotted owl pair's clutch or through forcing any number of individual birds into unfamiliar territory where the risk of predation may be greater or the supply of food smaller.

BIO-19 Mitigation Measure: Protect California spotted owl.

Before construction activities within suitable habitat, LADWP shall have a qualified biologist conduct USFS protocol surveys for the California spotted owl to establish or confirm the location of nests within the Project. The résumés of the proposed biologists shall be provided to the USFS for concurrence. If nests or breeding pairs are found during the surveys, the limited operating period (LOP) will be applied according to the ANF Land Management Plan (Standard 20 – Part 3). No Project-related activities will be allowed within these dates (February 1 to August 15) or until chicks have fledged. Where a biological evaluation by a qualified ornithologist determines that a nest site would be shielded from planned activities by topographic or other features that would minimize disturbance, the buffer distance may be reduced upon approval of the USFS on NFS lands. In addition, no helicopter overflights shall be authorized without USFS approval. If approved, minimum altitudes will be 300 feet above a territory at an altitude designated by the USFS. This buffer may be adjusted through consultation with the USFS.

6.3.3 Mammals

BIO-20 Special-Status Species Impact: The proposed Project could adversely affect the American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox.

The American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox have the potential to occur in the study area. It is possible that the proposed Project may have short-term indirect effects on these mammal species during construction of the new transmission line. Indirect impacts could also occur from clearing and grading for new tower locations. The removal of vegetation from these areas could result in the loss of forage and cover for these species. This impact could be considered significant under CEQA without the incorporation of the following mitigation actions.

Direct impacts to these species, if present, could occur from the proposed Project as a result of crushing from mechanized equipment and temporary disruption of foraging. Breeding behavior could also be disturbed due to construction noise and the timing of construction activities. Disturbance to the area would be associated with the temporary removal of vegetation for the construction of tower footings or pulling sites. Construction activity may result in the incidental take of individual species (i.e., adults and juveniles), depending on the construction season. Through the implementation of the Project Mitigation Measures, Project activities may affect, but are not likely to adversely affect, populations of these species, if present.

BIO-20 Mitigation Measure: Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox.

20a. In areas identified as suitable habitat during the 2008 surveys, preconstruction surveys will occur for badgers, ground squirrels, pocket mice, and kit foxes. If present and feasible, construction would be avoided in or adjacent to occupied habitat during breeding season.

20b. LADWP will consult with CDFG to see if a 2081 Permit for incidental take of Mohave Ground Squirrel is required.

BIO-21 Special-Status Species Impact: The proposed Project could adversely affect the sensitive bat species

Bats were observed during reconnaissance surveys, suitable habitat is present, and bats could move into or off of the site at any time. Direct impacts to this species could occur from the removal of active roosts and direct mortality of bats during Project activities. Bats are known to abandon young when disturbed. Maternity colonies form prior to March 1 and young are usually volant (flying) after July 31. Indirect impacts could occur from increased noise, lighting, and dust during construction.

BIO-21 Mitigation Measure: Protect sensitive bat species.

21a. LADWP shall conduct a pre-construction survey (e.g., vegetation removal, grading) for roosting bats within 200 feet of Project activities within 15 days before any grading of rocky outcrops or removal of trees (particularly trees 12 inches in diameter or greater than 4.5 feet above-grade with loose bark or other cavities).

1) LADWP shall also conduct surveys for roosting bats during the maternity season (March 1 to July 31) within 300 feet of Project activities. Trees and rocky outcrops shall be surveyed by a qualified bat biologist (i.e., a biologist holding a CDFG collection permit and a Memorandum of Understanding with CDFG allowing the biologist to handle bats). Surveys duration shall be a minimum of one day and one evening. The résumé of the biologist shall be provided to the USFS and BLM (as appropriate) for concurrence before any Project activities.

2) If active maternity roosts or hibernacula are found, the rock outcrop or tree occupied by the roost shall be avoided (i.e., not removed) by the Project, if feasible. If avoidance of the maternity roost is not feasible, the bat biologist shall survey (through the use of radio telemetry or other CDFG/USFS/BLM approved methods) for nearby alternative maternity colony sites. If the bat biologist determines, in consultation with and with the approval of the CDFG, USFS, and BLM (as appropriate), that there are alternative roost sites used by the maternity colony and young are not present, no further action is required, and it will not be necessary to provide alternative roosting habitat (i.e., Mitigation Measure BIO-21b would not apply, although Mitigation Measure BIO-21c would still apply). However, if there are no alternative roost sites used by the maternity colony, Mitigation Measure BIO-21b is required. If no active roosts are found, no further action is required. If active maternity roosts are absent, but a hibernaculum

(i.e., a non-maternity roost) is present, Mitigation Measure BIO-21b is not necessary, but Mitigation Measure BIO-21c is required.

21b. Provision of substitute roosting bat habitat. If a maternity roost will be impacted by the Project, and no alternative maternity roosts are in use near the site, substitute roosting habitat for the maternity colony shall be provided on, or close to, the Project site no less than three months before the eviction of the colony. Alternative roost sites will be constructed in accordance with the specific bats' requirements in coordination with CDFG and ANF. By making the roosting habitat available before eviction (Mitigation Measure BIO-21c), the colony will have a better chance of finding and using the roost. Large concrete walls (e.g., on bridges) on south or southwestern slopes that are retrofitted with slots and cavities are an example of structures that may provide alternative roosting habitat appropriate for maternity colonies. Alternative roost sites must be of comparable size and proximal in location to the impacted colony. The CDFG shall also be notified of any hibernacula or active nurseries within the construction zone.

21c. Exclude bats before demolition of roosts. If non-breeding bat hibernacula are found in towers or trees scheduled to be removed or in crevices in rock outcrops within the grading footprint, the individuals shall be safely evicted, under the direction of a qualified bat biologist, by opening the roosting area to allow airflow through the cavity or other means determined appropriate by the bat biologist (e.g., installation of one-way doors). The résumé of the bat biologist shall be provided to the USFS and BLM (as appropriate) for concurrence before any Project activities. In situations requiring one-way doors, a minimum of one week shall pass after doors are installed, and temperatures should be sufficiently warm for bats to exit the roost, because bats do not typically leave their roost daily during winter months in southern coastal California. This action should allow all bats to leave during the course of one week. Roosts that need to be removed in situations where the use of one-way doors is not necessary in the judgment of the qualified bat biologist shall first be disturbed by various means at the direction of the bat biologist at dusk to allow bats to escape during the darker hours, and the roost tree shall be removed or the grading shall occur the next day (i.e., there shall be no less or more than one night between initial disturbance and the grading or tree removal).

1) If an active maternity roost is in an area to be impacted by the Project, and alternative roosting habitat is available, the demolition of the roost site must commence before maternity colonies form (i.e., before March 1) or after young are flying (i.e., after July 31) using the exclusion techniques described above.

21d. Survey for bat nursery colonies. A CDFG-approved biologist shall conduct a habitat assessment for bat nursery colonies before any construction activity. The approved biologist shall then conduct a survey for bat nursery colonies or signs of such colonies before construction. Direct impacts to a nursery colony site shall not be allowed, and approach of, or entrance to, an active nursery colony site shall be prohibited. Before any blasting or drilling in the vicinity of a nursery colony site, the CDFG-approved biologist shall work with the construction crew to devise and implement methods to minimize potential indirect impacts to the nursery colony site from falling rock or substantial vibration (while a nursery colony is active). The methods shall include an option to halt any construction activity that would cause falling rock, substantial vibration impacts, or any other construction-related impact to a nursery colony as determined by the approved biologist, until the colony is inactive. Should falling rock block the entrance to a nursery colony site, the contractor shall work with the approved biologist to reopen an entrance to the site.

21e. If habitat must be removed for construction to continue, a two-step removal process will be implemented. The two-step removal process will involve permitted biologists to alter the habitat outside of the season of use (i.e., outside of hibernating/maternity season) to make the habitat less suitable, and the following day the habitat will be removed under the supervision of the permitted biologist.

6.3.4 Reptiles

BIO-22 Special-Status Species Impact: The proposed Project would impact special status reptiles, including southwestern pond turtle, coast horned lizard, California legless lizard, San Bernardino ringneck snake, coastal rosy boa, and two-striped garter snake.

Several USFS sensitive reptile species have the potential to occur within the Project area. The southwestern pond turtle is also a CDFG species of special concern. It typically lays eggs from late April to late July in Southern California, remaining active for more of the rest of the year before it overwinters sometime between late September and late November (Bettelheim 2005). In Southern California, pond turtles typically only overwinter for a month or two, as opposed to northern populations, which can overwinter for as much as eight months. While this species spends most of its time in the water, along the bank of pools, or basking on logs or rocks above the water, it does engage in terrestrial movements for egg-laying, for searching for a suitable mate, or for overwintering (Bettelheim 2005). Potential impacts to the southwestern pond turtle would be mostly limited to terrestrial movements. Construction is not expected to be in the vicinity of suitable ponded water for this species, with the exception of certain areas such as Drinkwater Flat. In this case, runoff from construction could be pushed into the water, degrading its quality and affecting any southwestern pond turtles that may be present. If any turtles are present and basking, they may be scared by human presence and dive or walk back into the water to hide, potentially affecting their subsequent levels of activity, depending on the time of day and the amount of time spent basking. On land, it is possible that pond turtles may overwinter in or near construction sites, where they may be injured during excavation or grading.

The coast horned lizard is listed as a species of special concern. It is dormant and hibernates between approximately November 15 and February 15. Hibernation is obligatory, and the animal hibernates in burrows, usually within a couple inches of the ground surface during the day. As temperatures rise, the lizard will appear to escape extreme daytime temperatures by retreating to burrows. They forage and are most active during the morning and evening. During the active season, the lizards spend the night below the sand, on the surface, or in burrows. Potential impacts to these species include habitat loss leading to a reduction in local species range or dispersal to adjacent, less-suitable habits; disturbance of general foraging or breeding behavior; and mortality during construction through crushing, grading, or burying that may be required for tower site preparation or construction. Individuals may also become scared of construction activity, noise, and/or vibrations and vacate the area, forcing them to temporarily move to areas which they may be unfamiliar with or which may be unsuitable habitat for them. This may also lead to increased competition or predation from wildlife in adjacent habitats. However, this is a short-term impact, as it is expected that individuals would begin moving back to their native habitat shortly after construction is finished in the area or after the area has become at least partially restored through revegetation.

California legless lizard is a species of special concern that is typically found in sand or sandy-loam soils mixed with gravel, stones, or boulders due to its highly fossorial nature (Fellers 2009). Some of the suitable habitats that it could occur in within the Project area include chaparral, oak woodlands, or cottonwood/sycamore-dominated riparian areas. They may bask in warm sand during the day, but are typically underground anywhere from 25 cm below the surface (on average) to as much as 1.5 m below the surface. They give birth between September and November. Although they are not typically observed above ground, California legless lizards may be present within the Project area and could be trampled or crushed by equipment as it moves through suitable habitat, such as chaparral. Because they typically range from 90 to 180 mm in length (Fellers 2009), they may be more difficult to detect than a typical snake, which is what they resemble. Additionally, because they are highly fossorial, they may be uncovered, injured, or killed during excavation operations for tower construction.

The San Bernardino ring neck snake tends to be present in moist habitats at springs or watercourses, or on damp soil (Stebbins 2003, Bartlett and Bartlett 2009). It can usually be found on the ground covered by bark or other matter or inside logs. It gives birth in June and July (Stebbins 2003). The coastal rosy boa is a BLM sensitive species in addition to being a USFS sensitive species. It typically inhabits a mixture of rocky areas and permanent or intermittent water, although it is not tied to permanent water (Stebbins 2003, Bartlett and Bartlett 2009). They may burrow underground or may seek shelter under cover; they typically give birth between October and November (Stebbins 2003). The two-striped garter snake is a BLM sensitive and CDFG species of special concern. It is primarily aquatic and is often found in or near permanent, rocky water (Stebbins 2003, Bartlett and Bartlett 2009). It is usually found around oak woodland, brushland, and coniferous forests and may be active during day or night. Its reproductive period is in the summer (Stebbins 2003). All of these species may be affected by Project construction, particularly on land. Snakes that are hidden under cover may be difficult to detect and may be trampled or crushed by foot traffic, vehicles, or equipment driving over vegetation or leaf cover. If any individuals are burrowed within the Project area, such as the coastal rosy boa, these may be injured or killed during excavation activities for tower construction if the burrow is missed during preconstruction surveys. Snakes that are in nearby water may be affected if runoff from construction enters the water.

BIO-22 Mitigation Measure: Protect special status reptile species.
A qualified biologist with demonstrated expertise with special-status herpetofauna shall monitor all construction activities and assist LADWP in the implementation of the monitoring efforts. The résumé of the proposed biologist will be provided to the USFS or BLM (as appropriate) for concurrence befpre the onset of ground-disturbing activities. The authorized biologist will be present during ground-disturbing activities immediately adjacent to or within habitat that supports populations of the special-status herpetofauna. Any special-status herpetofauna found within a Project impact area shall be salvaged by the authorized biologist and relocated to suitable habitat outside the impact area. If the installation of exclusion fencing is deemed necessary by the authorized biologist, the authorized biologist will direct the installation of the fence. Clearance surveys for special-status herpetofauna shall be conducted by the authorized biologist before the initiation of construction each day.

BIO-23 Special Status Species Impact: The proposed Project may impact desert tortoise.

The desert tortoise is a federal and State threatened species that ranges from the Mojave and Sonoran deserts of southeastern California and southern Nevada, south through Arizona into Mexico. The desert tortoise requires sufficient suitable plants for forage and cover, and suitable substrates for burrows and nest sites. The desert tortoise is threatened by off-road vehicles, livestock grazing, and mining. Disease related to human-caused stress is also taking a heavy toll on the desert tortoise (Berry 2008).

This species is present in the northern section of this proposed Project. Tower construction and grading of new or existing access roads will result in habitat loss, which will indirectly affect desert tortoise by removing shelter and vegetation, resulting in increased vulnerability to predators such as ravens and decreased food availability. Because tortoises may use desert washes as habitat, excessive disturbance to these areas as a result of construction will degrade and possibly reduce habitat further. There remains the possibility that a live tortoise or a burrow will go unnoticed during actual construction and may result in damage, destruction, or mortality as applicable due to vehicles or equipment. Tortoises which wander too close to construction will require manual relocation by an authorized biologist and will likely undergo stress during the movement process and possibly afterward until they are able to find suitable shelter again. Residual impacts resulting from construction may include an increase in human presence for transmission line maintenance or security patrols after the transmission line is constructed, but this increase in presence will only occur when necessary and will be isolated incidents. Any direct or indirect impact to the desert tortoise or its occupied habitat (e.g., vehicle crushing a tortoise, habitat removal) from construction would have a substantial adverse effect on one or more individuals of a species that is federal- or state-listed by habitat modification. These impacts are significant under CEQA but mitigable to a less-than-significant level with implementation of Mitigation Measures presented below.

BIO-23 Mitigation Measures: Protect desert tortoise and habitat loss.

23a. Preconstruction clearance surveys will be conducted for desert tortoise in the area designated as a "Survey Area" in the West Mojave Plan, "Alternative A" and areas within suitable habitat. If tortoise sign is found, construction activities should either be monitored by a tortoise biologist with a valid permit, or a tortoise-proof fence should be erected to preclude tortoise from the area of impact. If no tortoise sign is found, monitoring by a tortoise biologist would not be required. Instead, a biologist could be on call should a tortoise wander into non-monitored sites.

23b. To facilitate the free movement of desert tortoises, roadbeds should not be lowered, and berms placed along dirt roads should not exceed 12 inches or a slope of 30 degrees within the area designated as a "Survey Area" in the West Mojave Plan, "Alternative A" and areas that sign or habitat was found during the preconstruction surveys.

23c. Burrows within 100 feet of the construction zone shall be flagged by a person authorized by the USFWS to handle desert tortoises so that the qualified biologist would be able to more easily locate them during construction. The qualified biologist shall be on-site to monitor all construction that occurs in the vicinity of flagged burrows and to watch for desert tortoise.

23d. All desert tortoise burrows or pallets in the construction area shall be excavated by the USFWS-authorized biologist.

23e. A translocation plan will be approved by the wildlife agencies before removal or handling of tortoise.

23f. Desert tortoises that are found above ground during construction and need to be moved from potential harm shall be placed in the shade of a shrub by the USFWS-authorized biologist. Any desert tortoise removed from burrows shall be placed in an unoccupied burrow of approximately the same size as the one from which it was removed. Tortoises shall not be placed more than 1,000 feet from where they were found. If an existing burrow is unavailable, the authorized biologist shall construct or direct the construction of a burrow of similar size, shape, depth, and orientation as the original burrow. Desert tortoises moved during inactive periods would be monitored for at least two days after placement in the new burrows to ensure their safety. The authorized biologist shall be allowed some judgment and discretion to ensure that the survival of the desert tortoise is likely.

23g. If a tortoise is in a construction or maintenance area and is not moving, adjacent activities would be halted until the authorized biologist is able to move it out of harm's way.

23h. Any time a vehicle is parked, the ground around and under the vehicle shall be inspected for desert tortoises before the vehicle is moved. If a desert tortoise is observed, it shall be left to move on its own. If this does not occur within 15 minutes, the authorized biologist shall remove and relocate the tortoise.

23i. All construction and maintenance activities in desert tortoise habitat shall be conducted between dawn and dusk.

23j. Within potential desert tortoise habitat areas, vehicles shall not exceed 25 miles per hour on access roads during the period of highest desert tortoise activity (March 1 through October 31).

23k. Tower foundations or other excavations that pose a potential to entrap or injure tortoise shall be inspected on a regular basis until the foundation or other structure is in place. Excavations also will include an escape ramp where appropriate.

23l. A desert tortoise education program will be presented to all personnel who will be onsite at any time, including but not limited to contractors, contractors' employees, supervisors, inspectors, and subcontractors. This program will be presented in English and Spanish, if appropriate, and contain information concerning the biology and distribution of the desert tortoise and other sensitive species, its legal status and occurrence in the proposed Project area, the definition of "take" and associated penalties, the terms and conditions of this biological opinion, measures designed to minimize the effects of construction activities, the means by which employees can facilitate this process, and reporting requirements to be implemented when tortoises are encountered or in cases of non-compliance with the Biological Opinion. The name of each individual trained will be recorded on a sign-in sheet.

23m. A litter-control program will be implemented to reduce the attractiveness of the area to opportunistic predators such as desert kit fox, coyotes, and common ravens. Trash and food items will be disposed of properly in predator-proof containers with re-sealing lids. Trash containers will be emptied, and construction waste will be removed daily from the Project area and disposed of in an approved landfill.

23n. LADWP shall report any observations of raven predation on desert tortoises in the Project area to CDFG and USFWS.

23o. Temporary tortoise-proof fencing will be installed on all areas of known tortoise habitat boundaries to ensure impacts are minimized to the maximum extent possible. An initial tortoise clearance of the fence line will be conducted before fence construction.

1) Temporary fencing should consist of 1-inch mesh or 1-inch horizontal by 2-inch vertical mesh (hardware, cloth or plastic) and be installed flush with the ground and extend at least 18 inches above-ground. Temporary tortoise-proof fencing should not be buried. In areas of high rodent activity where plastic mesh is used, temporary fencing may need more frequent monitoring to ensure no breaches exist.

6.3.5 Amphibians

BIO-24 Special Status Species Impact: The proposed Project could adversely affect arroyo toad and California red-legged frog.

The proposed Project has the potential to impact arroyo toad and California red-legged frog due to habitat removal or disturbance from construction (e.g., crushing of toads or frogs with construction equipment). Because both of these species inhabit specialized habitat, impacts to either would be significant. While no construction will occur near the known red-legged frog population in the St. Francis Dam reach of San Francisquito Creek or near the known arroyo toad population in Castaic Creek, potentially suitable habitat located elsewhere in the Project area may be affected, indirectly reducing the likelihood and ability of either species to expand outside of their currently occupied habitat. This could potentially be a long-term effect to either species depending on the amount of time it takes to restore affected habitat. It is possible that construction may unknowingly occur directly over a burrowed individual(s), which could directly or indirectly cause stress or mortality if that localized area is graded, buried, or built over. This would only be a short-term risk during the construction period, although impacts due to human presence (i.e., crushing with a vehicle) will remain a long-term possibility throughout any future maintenance activities. Protocol surveys were conducted in 2008 and 2009 for both the California red-legged frog and arroyo toad. Although no individuals were found outside of the known population of each species within the Project area, preconstruction clearance surveys should be conducted to reduce potential direct impacts. These impacts would be significant under CEQA but mitigable to less than significant through the implementation of GPs and Mitigation Measures.

BIO-24 Mitigation Measure: Protect arroyo toad and California red-legged frog.

24a **LADWP shall conduct USFWS-approved protocol surveys for arroyo toads and California red-legged frogs at all locations containing suitable habitat near the proposed construction sites** within two years before the start of construction.

24b If arroyo toads are detected, further surveys within the area will not be required and the avoidance measures detailed below will be followed. If no arroyo toads are detected, habitat assessments will be performed on a yearly basis to determine if the area continues to provide suitable habitat; if an area continues to provide suitable habitat, surveys will be repeated every two years until construction is completed. For all areas in which this species has been documented, LADWP shall develop and implement a monitoring plan that includes the following measures in consultation with the USFWS and USFS.

1) LADWP shall retain a qualified biologist with demonstrated expertise with arroyo toads to monitor all construction activities in occupied arroyo toad habitat and assist LADWP in the implementation of the monitoring program. The résumés of the proposed biologists will be provided to the USFS for concurrence. This biologist will be referred to as the authorized biologist hereafter. The authorized biologist will be present during all activities immediately adjacent to or within habitat that supports populations of arroyo toad.

2) All trash that may attract predators of the arroyo toad will be removed from work sites or completely secured at the end of each work day. Before the onset of any construction activities, LADWP shall meet on-site with staff from the USFS and the authorized biologist. LADWP shall provide information on the general location of construction activities within habitat of the arroyo toad and the actions taken to reduce impacts to this species. Because arroyo toads may occur in various locations during different seasons of the year, LADWP, USFS, USFWS, and authorized biologists will, at this preliminary meeting, determine the seasons when specific construction activities would have the least adverse effect on arroyo toads.
3) Any arroyo toads found during clearance surveys shall be reported to the USFWS and the USFS immediately. Clearance surveys shall occur on a daily basis in areas that contain suitable habitat.
4) If the authorized biologist determines that Project activities are disturbing the species, they shall notify the construction manager, and the construction manager, in consultation with the biologist, will have the authority to halt all activities until appropriate corrective measures have been completed.
5) To ensure that diseases are not conveyed between work sites by the authorized biologist or his or her assistants, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force will be followed at all times.
6) LADWP will avoid ground disturbing activities (e.g., grading, stream crossing upgrades, parking) along access roads within a 1.0 mi (1.6 km) buffer of occupied stream habitat for arroyo toads during the activity period for arroyo toads (March through November). This date and buffer may be modified based on the existing temperature regime and habitat conditions, with Angeles National Forest approval.
7) LADWP will limit use of the access roads in areas known to support arroyo toad within a 1.0-mile (1.6 km) buffer to daylight hours only during the activity period for arroyo toads (generally March through November). Use of these roadways during rain events will not occur during the activity period for arroyo toads. Vehicle speeds will be limited to 15 mph (24 kph), and no parking or loitering will occur along the access roads. A qualified biologist must permanently remove from within the Project area any individuals of exotic species, such as bullfrogs, crayfish, and centrarchid fishes, to the maximum extent possible and ensure that activities are in compliance with the California Fish and Game Code.
8) No stockpiles of materials will occur in areas occupied by arroyo toads.
9) Any spills of fluids that may be hazardous to aquatic fauna (gasoline, hydraulic fluid, motor oil, etc.) in areas that may contain arroyo toads will be reported to the USFS and USFWS within one hour.
10) For each ac/ha of arroyo toad occupied habitat that is permanently impacted on the Angeles National Forest, five ac/ha of arroyo toad occupied habitat will be conserved in the vicinity of the impacted habitat (i.e., impacts will be offset at a habitat ratio as required by the final Biological Opinion).

24c If California red-legged frogs are detected, further surveys within the area will not be required and the avoidance measures detailed below will be followed. If no California red-legged frogs are detected, habitat assessments will be performed on a yearly basis to determine if the area continues to provide suitable habitat; if an area continues to provide suitable habitat, surveys will be repeated every two years until construction is completed. For all areas in which this species has been documented, LADWP shall develop and implement a monitoring plan that includes the following measures in consultation with the USFWS and USFS.

1) All trash that may attract predators of red-legged frogs will be removed from work sites or completely secured at the end of each work day.
2) Between November 1 and March 31, no work will be authorized within one mile of occupied habitat, and no vehicular crossings at wet fords of those channels will be authorized. The one-mile buffer distance may be reduced based on the topography of the site, with the approval of the USFWS and the USFS.

3) If and as required by USFWS, between April 1 and October 31, no work will be authorized within 0.5 mile of occupied habitat, and no vehicular crossings at wet fords of those channels will be authorized.
4) If and as required by USFWS, from November 1 thru March 31, overflights will be restricted to a minimum altitude of 1,000 feet (305 m) from the stream bottom within 1.0 mile (1.6 km) of a California red-legged frog occupied stream.
5) Before the onset of any construction activities, LADWP shall meet on-site with staff from the USFWS and the authorized biologist. The authorized biologist shall hold a current red-legged frog permit from USFWS. LADWP shall provide information on the general location of construction activities within habitat of the red-legged frog and the actions taken to reduce impacts to this species. Because red-legged frogs may occur in various locations during different seasons of the year, LADWP, USFWS, USFS, and authorized biologists will, at this preliminary meeting, determine the seasons when specific construction activities would have the least adverse effect on red-legged frogs.
6) Where construction would occur in habitat where red-legged frogs are widely distributed, work areas will be fenced in a manner that prevents equipment and vehicles from straying from the designated work area into adjacent habitat. The authorized biologist will assist in determining the boundaries of the area to be fenced in consultation with the LADWP and the responsible agency(s). All workers will be advised that equipment and vehicles must remain within the fenced work areas.
7) The authorized biologist will direct the installation of the fence and conduct a minimum of three nocturnal surveys to move any red-legged frogs from within the fenced area to suitable habitat outside of the fence. If red-legged frogs are observed on the final survey or during subsequent checks, the authorized biologist will conduct additional nocturnal surveys if he or she determines that they are necessary in concurrence with the USFWS/CDFG/USFS.
8) Fencing to exclude red-legged frogs will be at least 24 inches in height.
9) Construction activities that may occur near breeding pools or other areas where large numbers of red-legged frogs may congregate will be conducted during times of the year when individuals have dispersed from these areas (i.e., winter) or the species is dormant, unless otherwise authorized by the USFS and USFWS. The authorized biologist will assist LADWP in scheduling its work activities accordingly.
10) If red-legged frogs are found within an area that has been fenced to exclude red-legged frogs, activities will cease until the authorized biologist moves the red-legged frogs.
11) If red-legged frogs are found in a construction area where fencing was deemed unnecessary, work will cease until the authorized biologist moves the red-legged frogs. The authorized biologist in consultation with USFWS/CDFG/USFS will then determine whether additional surveys or fencing are needed.
12) Any red-legged frogs found during clearance surveys shall be reported to the USFWS and the USFS immediately. Clearance surveys shall occur on a daily basis in the work area.
13) If the authorized biologist determines that Project activities are disturbing the species, they shall notify the construction manager, and the construction manager, in consultation with the biologist, will have the authority to halt all activities until appropriate corrective measures have been completed.
14) LADWP shall restrict work to daylight hours, except during an emergency, to avoid nighttime activities when red-legged frogs may be present on the access road. Traffic speed should be maintained at 15 mph or less in the work area.
15) A qualified biologist must permanently remove from within the Project area any individuals of exotic species, such as bullfrogs, crayfish, and centrarchid fishes, to the maximum extent possible, and ensure that activities are in compliance with the California Fish and Game Code.
16) No stockpiles of materials will occur in areas occupied by California red-legged frogs.
17) To ensure that diseases are not conveyed between work sites by the authorized biologist or his or her assistants, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force will be followed at all times.

18) Any spills of fluids that may be hazardous to aquatic fauna (gasoline, hydraulic fluid, motor oil, etc.) in areas that may contain California red-legged frogs will be reported to the USFS and the USFWS within one hour.

6.3.6 Management Indicator Species

MIS that occur in the Project area include mule deer, mountain lion, arroyo toad, song sparrow, and California spotted owl. A review was conducted to determine whether the Project area was within known or potential habitat for each MIS. As noted in Table 10, the mule deer is an indicator of management of healthy diverse habitats, the mountain lion of habitat fragmentation, the arroyo toad of aquatic habitat, the song sparrow of riparian habitat, and the California spotted owl of montane conifer forest. Each of these species and/or its habitat may be affected by Project implementation, for which a brief discussion is included below. For a more detailed analysis of Project effects on these species, refer to the *Management Indicator Species Analysis for the Barren Ridge Renewable Transmission Project.*

Mule Deer – Healthy Diverse Habitats

The construction, maintenance and operation of a transmission line would result in both temporary and permanent ground disturbance. Construction of steel lattice towers would create a temporary disturbance that consists of structure work area, pulling and tensioning sites, sleeving and stringing operations, guard structures, material staging sites, and concrete batch plants. Permanent disturbance for steel lattice towers consists of the structure footprint and foundations, and access roads needed for operations and maintenance activities. For transmission line projects, the construction and maintenance of access roads creates the greatest potential for ground disturbing impacts. Some temporary ground disturbances have the potential to increase the quality of deer foraging habitat, but it should be noted that enough moisture must be present to stimulate any appreciable growth. Implementing the Project can potentially alter the intensity and frequency of wildfires, which greatly influences foraging habitat. The construction of new access roads may decrease the total area burned by wildfires by creating firebreaks, which would result in an increase in fuel over time and late seral-stage plant communities that are usually poor deer foraging habitat. Most of the proposed segments in the ANF parallel existing transmission lines and would utilize existing access and spur roads. Construction noise and disturbance may temporarily drive mule deer away from the work vicinity, but they would be expected to return once construction has moved or completed. General practices that would reduce short-term or long-term effects to mule deer include GP-24, GP-34, GP-41, GP-42, GP-43, and GP-48. Mitigation measures that would reduce short-term or long-term effects to mule deer include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), and BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife).

Mountain Lion – Habitat Fragmentation

The Project is expected to have little direct effects on mountain lions. Activities may temporarily displace or disturb individuals, but this is expected to be an uncommon occurrence due to the large home ranges utilized by mountain lions, which in turn results in a typically low population density. Increased vehicle activity may increase the chance for a collision and/or illegal poaching, resulting in mortality, but this would be expected to be a rare occurrence. The indirect effects of the Project would likely be to slightly improve the quality of mule deer habitat. Additionally, the edge habitat created by additional access roads has the potential to provide hiding cover for both deer and mountain lions. In California chaparral, mountain lions were attracted to the edges of recent burns where deer tended to congregate (Quinn 1990). Mountains lions are active during nocturnal or crepuscular hours and are not expected to incur disturbance from daytime vegetation treatment activities. Indirectly, the Project vegetation treatments may reduce the density of hiding cover for these animals, but the linear nature of the Project footprint is not expected to increase habitat fragmentation. As with mule deer, individual mountain lions may be driven from the construction vicinity by disturbance and human presence, but would be expected to return upon movement or completion of construction. General practices that would reduce short-term or long-term effects to mountain lion include GP-24, GP-34, GP-41, GP-42, GP-43, and GP-48. Mitigation measures that would reduce short-term or long-term effects to mountain lion include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), and BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife).

Arroyo Toad – Aquatic Habitat

It is not expected that the BRRTP will have any significant direct or indirect effects on arroyo toads or arroyo toad habitat. The only known population of arroyo toads in the Project area occurs within Castaic Creek north of the Elderberry Forebay. Construction on Segment J will terminate at the Castaic Power Plant, but it is possible that toads may be encountered on the power plant access road during construction, which could lead to toad injury or mortality. Habitat degradation and/or removal is expected to be minimal, as most suitable arroyo toad habitat is not directly under the proposed transmission lines. Additionally, no-construction buffers will be implemented and enforced around RCAs. One indirect effect to arroyo toad habitat that may result from construction is the spread of non-native species that could affect the quality of breeding pools and upland habitat. Vehicles serve as efficient methods of seed dispersal, and it is possible that non-native seeds may become attached to Project vehicles and equipment, allowing them to move quickly up or down an access road and into a new area. General Practices that would reduce short- and long-term effects to the arroyo toad and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to the arroyo toad and its habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-24 (Protect arroyo toad and California red-legged frog).

Song Sparrow – Riparian Habitat

If construction activities are concurrent with nesting season, then impact to song sparrow breeding success is possible. However, implementation of this Project is not expected to have significant direct effects upon song sparrows, since permanent alteration of riparian habitat is expected to be minimal. Indirect effects to song sparrows will probably be positive as vegetation recovers. Periodic rejuvenation of streamside vegetation after flooding events is considered an improvement for many wildlife species and is a natural factor in long-term riparian health. Song sparrow numbers have shown a positive correlation with fire-damaged streamside habitats (Big Sur Ornithology Lab 2000), which may be a response to greater feeding opportunities along edge habitats. General practices that would reduce short-term or long-term effects to song sparrow and to riparian habitat include GP-5, GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to song sparrow include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

California Spotted Owl – Montane Coniferous Forest

If construction activities are concurrent with nesting season, then impact to California spotted owl breeding success is possible, not just with impacts to riparian areas, but with impacts to other spotted owl habitats such as live oak or mixed conifer forests. It is expected that there may be some negative direct effects to spotted owls, particularly from construction noise, which may result in displacement, and any tree trimming, which may result in displacement, injury, or mortality of any owls that happen to be present. However, GPs—such as tower avoidance of known habitat or territories, presence of a biological monitor, and efforts to minimize the construction footprint—are expected to reduce the likelihood and severity of any direct effects. One notable indirect effect that may occur is the enhancement of spotted owl habitat through the destruction of neighboring chaparral. Chaparral clearing may enhance spotted owl foraging habitat by eventually providing new plants for woodrats to feed on, increasing the number of woodrats in the area, and by opening up the canopy cover to allow owls to better feed on woodrats and other prey (Weatherspoon et al. 1992). General practices that would reduce short-term or long-term effects to California spotted owl include GP-8, GP-24, GP-25, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short-term or long-term effects to California spotted owl include AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-19 (Protect California spotted owl).

7.0 Impact Results

7.1 NEW 230 KV TRANSMISSION LINE

In the following analysis, potential impacts of each segment are defined and then compared to the impacts of the proposed Project. The types of potential direct and indirect impacts on biological resources due to the proposed Project activities are described below for each route.

Impacts to listed species would be considered significant due to their protection under ESA and CESA and would require formal consultations with USFWS and CDFG as appropriate.

Vegetation communities traversed by the various segments within the 230 kV study corridors are summarized by Segment. The distance each segment coincides with the various vegetation communities and special-status species are noted in detail in the biology impact table for the 230 kV Transmission Line segments, which is included in Appendices. Note that there are instances where two or more communities with the same residual impact straddle the centerline and thus were summarized in one row in the impact table. In these instances, the mileage traversed was assigned to the most sensitive community at that location to ensure an accounting of these important resources. The summary of the biological resources below emphasizes the relative sensitivity of each segment based on the predominant sensitivity of vegetation communities, wildlife habitat, habitat quality and quantity.

7.1.1 Segment A

The northernmost limit of Segment A is located at the Barren Ridge Switching Station and the southern limit is located at N35°05.247, W118°11.911. The line between these points runs north to south at a bearing of 219° true. This portion of the preliminary alternative corridor is approximately 13 miles long and the predominant plant community is Mojave creosote bush scrub. Evidence of medium to high grazing intensity (sheep scat, trampling and denuded earth) is present consistently throughout Segment A. Multiple intermittent flowing water systems, including Cache Creek at mile point (MP) 10.5; intersect Segment A along its length. A portion of the route includes disturbance from the construction of New and Old State Highways 58 (MP 11.0 and MP 12.1) and their associated on and off ramps. The highly disturbed area between these roadways was not surveyed. Two 230 kV transmission lines are concomitant with Link 1 of Segment A. Aqueduct City, a failed real estate development, is located in the survey corridor from MP 11.2 to 12.3. This portion of the corridor was not surveyed, because of the high degree of disturbance.

Wildlife

Desert Tortoise

Under Segment A, there would be direct or indirect construction impacts to desert tortoise, expected to be present due to separate encounters in 2008 by POWER (POWER 2009c; CDFG 2010) and Garcia and Associates. It is estimated that the maximum permanent disturbance to desert tortoise occupied habitat would be 3.0 acres, while the maximum temporary disturbance would be 21.6 acres. Project construction could result in direct adverse effects to desert tortoise. Injury or mortality could occur to tortoises underground in undetected burrows that are driven over by construction vehicles or equipment, or to tortoises that are under vegetation and are not detected during construction or pre-construction surveys. Permanent habitat loss would occur as a result of the construction of new transmission towers and new access roads, resulting in decreased forage and vegetative cover for tortoises in the area. Because tortoises may use desert washes as habitat, excessive disturbance to these areas as a result of construction would degrade and possibly reduce habitat further. During construction, increased predation could occur from ravens and coyotes, which are attracted to human activity to scavenge for food. Tortoises that wander too close to construction would require manual relocation by an authorized biologist and would likely undergo stress during the movement process and possibly afterward, until they are able to find suitable shelter again. Since vegetation re-growth is a slow process in this arid climate, creosote bushes large enough to provide good cover would take a decade to revegetate the area.

Habitat loss and reduced vegetation may subject desert tortoises to increased predation from aerial predators by decreasing the amount of cover available to hide under. Additionally, construction of a new transmission line would increase nesting and perching opportunities for raptors, increasing the likelihood of predation on desert tortoises. After construction is completed, injury or mortality from vehicle collisions may occur during maintenance activities and security patrols. General practices that would reduce short-term or long-term effects to desert tortoise include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to desert tortoise include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-23 (Protect desert tortoise and habitat loss).Any additional reasonable and prudent measures that arise during consultation with USFWS will also be implemented into project construction.

Loggerhead Shrike

This species, while not included in the direct construction corridor impacts, has nevertheless been observed within the Segment A corridor. Under Segment A, there would be direct or indirect effects to loggerhead shrike, expected to be present due to a sighting during 2008 desert habitat surveys (POWER 2009c). Tower construction and grading of new or existing access roads would result in habitat and vegetation loss. This would cause habitat degradation which may make the area less appealing to loggerhead shrike individuals. It is expected that preconstruction surveys and/or biological monitoring will locate any nests within shrubs or trees in the area, although if any nests are not located, this could result in injury or mortality of individuals. Construction noise and human presence may cause birds to disperse from the area, potentially abandoning a nest if any birds are nesting nearby during construction.

General practices that would reduce short-term or long-term effects to loggerhead shrike include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to loggerhead shrike include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Desert Kit Fox

Under Segment A, there would be direct or indirect construction impacts to desert kit fox, expected to be likely to occur due to numerous signs and habitat identified by POWER during 2008 desert habitat surveys, including skeletal remains (POWER 2009c). Tower construction and grading of new or existing access roads will result in habitat loss, which may result in a temporary increase in food availability by providing less cover for wildlife that the desert kit fox preys upon. Habitat degradation may also occur as a secondary effect of adjacent habitat loss or general construction access. This could result from the spread of non-native vegetation in the construction or access area or from excessive dust from construction in the desert area, necessitating the implementation of non-native weed prevention and dust control measures. Preconstruction surveys will identify any possible active or inactive desert kit fox burrows, but any unnoticed burrows may be crushed during construction, possibly resulting in injury or mortality of one or more kit foxes should they be present in the area. Any kit foxes around Segment A may be scared away from the area or to other burrows by construction noise or vibrations, but as human presence will only be temporary, it is expected that this would result in a short-term effect.

General practices that would reduce short-term or long-term effects to desert kit fox include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to desert kit fox include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Mohave Ground Squirrel and Southern Grasshopper Mouse

Under Segment A, there may be direct or indirect construction impacts to Mohave ground squirrel and southern grasshopper mouse. Mohave ground squirrel is expected to have a possibility of occurring due to availability of habitat, historical occurrences, and POWER's 2008 desert habitat survey results (POWER 2009c, CDFG 2010). Southern grasshopper mouse is expected to have a possibility of occurring based on availability of suitable habitat. Tower construction and grading of new or existing access roads will result in habitat loss, resulting in a decrease in food availability for these species and possibly an increase in predation risk due to reduced vegetation cover. Preconstruction surveys will identify any possible Mohave ground squirrel and southern grasshopper mouse burrows, but as ground squirrel burrows are often dug under large shrubs (Leitner et al. 1995, Reid 2006), they may be difficult to see, leaving a possibility that burrows will go unnoticed. These burrows may be crushed during construction, resulting in possible injury or death to one or more individuals and a reduction in suitable hiding places. Ground squirrels or grasshopper mice may be scared out of their burrows by construction noise or vibration, but because both species may maintain multiple home and accessory burrows (Reid 2006), it is not expected that this would result in the complete displacement of any individuals unless they happen to be currently residing only in the ROW. Displacement of either of these species from burrows may lead to injury or mortality due to exposure to predation from raptors or other predators. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any small mammals in the area, which may fall into them.

General practices that would reduce short-term or long-term effects to Mohave ground squirrel and southern grasshopper mouse include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Mohave ground squirrel and southern grasshopper mouse include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Burrowing Owl

Under Segment A, there may be direct or indirect construction impacts to burrowing owl, expected to have a possibility of occurring based on the presence of suitable habitat and known occurrences of this species on Segments B and C. Tower construction and grading of new or existing access roads will result in habitat and vegetation loss, which will result in habitat fragmentation and degradation of the overall habitat quality, making it less appealing and less suitable for burrowing owls. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-16, will identify any possible active or inactive burrowing owl burrows, but some burrows may still go unnoticed or be incorrectly identified as rodent-only burrows and may therefore be crushed or damaged by vehicles, heavy equipment, or trampling. This may result in the injury or mortality of one or more owls if they are present. Construction activity may draw the attention of scavengers, resulting in an increased risk of predation. Because burrowing owls are most active at dusk and dawn (Zarn 1974) and have a reduced capability to forage at night (Voous 1988), the presence of humans, vehicles, and heavy equipment may disrupt any foraging or nesting practices during construction hours.

General practices that would reduce short-term or long-term effects to burrowing owl include GP-8, GP-23, GP-24, GP-25, GP-34, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to burrowing owl include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-16 (Protect burrowing owl).

Pallid Bat and Western Mastiff Bat

Under Segment A, there may be direct or indirect construction impacts to pallid bat and western mastiff bat. Pallid bat is expected to have a possibility of occurring on this segment based on known habitat preferences and the presence of moderate, openly-spaced shrub cover and relative lack of rocky roosting habitat. Western mastiff bat is expected to be likely to occur on this segment based on desert shrub foraging habitat and two existing transmission lines for roosting habitat. Tower construction and grading of new or existing access roads would result in loss of foraging habitat and degradation in habitat quality, although tower construction may provide additional roosting habitat for the western mastiff bat. Pallid bats in particular are sensitive to human disturbance, and construction during summer months, when bat activity is higher, may cause a greater degree of disturbance to the bats, potentially leading to their abandonment of the area (Vaughan and O'Shea 1976). This can indirectly lead to injury or mortality if it results in encounters with equipment or in decreased fitness at a new location due to unfamiliarity. The bats would likely return to the same roost the following season if it were still available (B. Doering personal communication 2011). Mating for pallid bats occurs from October to February, birth from April to July, and final weaning in August; mating in western mastiff bats typically begins in early March with birth ending in September (Reid 2006). Construction during certain time periods of these windows may be more disturbing to one species over the other, if present.

Should a bat roost be disturbed by construction, complete abandonment of the roost may result, particularly for more sensitive species like pallid bats. This may lead to complete nesting failure for the season, resulting in a loss of that year's new bat births. Because bats are mainly nocturnal, any night construction would disturb them, disrupting foraging and potentially leading to injuries. Disruption of hibernation is unlikely given the generally warm winters in Southern California. McNab (1974) suggests that only bats that are both small and do not cluster in groups can hibernate when the environmental temperature is above 14°C (57.2°F). Pallid bats may roost alone or in groups from two to several hundred and, although they will hibernate in cold parts of their range, they overwinter in coastal California (Rambaldini 2005). They have been reported to remain active at temperatures between -5°C (23°F) and 10°C (50°F). Western mastiff bats cluster in groups of 30 to several hundred and do not undergo long periods of hibernation, instead remaining periodically active throughout the winter (Siders 2005). It is likely that bats in the Project area would periodically enter states of torpor but would generally remain relatively active compared to bats in colder parts of the country, where hibernation is more feasible.

General practices that would reduce short-term or long-term effects to special-status bat species include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short-term or long-term effects to special-status bat species include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-21 (Protect sensitive bat species).

American Badger

Under Segment A, there would be direct or indirect construction impacts to American badger, expected to be likely to occur based on availability of suitable habitat and known active burrows near conjoining Segment B. Tower construction and grading of new or existing access roads will result in habitat and vegetation loss, which may result in a temporary increase in food availability due to reduced cover for rodents and other species that badgers prey upon. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-20, will identify any possible active or inactive American badger burrows, but some burrows may still go unnoticed and may therefore be crushed or damaged by vehicles, heavy equipment, or trampling. This may in turn result in the injury or mortality of one or more badgers. Badgers may be displaced by construction activity, including noise and vibrations, but because their home ranges can be up to 400 acres for females and up to 600 acres for males, it is likely that any displaced individuals would be able to expand outside of the construction zone without a significant impact on their well-being.

General practices that would reduce short-term or long-term effects to American badger include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to American badger include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Coast (San Diego) Horned Lizard

Under Segment A, there may be direct or indirect effects to coast horned lizard which is expected to have a possibility of occurring due to availability of suitable habitat. Tower construction and grading of new or existing access roads would result in habitat and vegetation loss, and may result in direct injury or mortality of individuals. Removal of chaparral for the grading of access roads or tower sites would reduce or degrade suitable habitat for this species. Additionally, any coast horned lizards that go undetected by preconstruction surveys—in compliance with mitigation measure BIO-22—and are present under vegetation, on roads, in streambed crossings, or in burrows, may be crushed by foot traffic, vehicles, or heavy equipment. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any coast horned lizards which may fall into them. It is expected that the risk of falling into an open hole would be greater overnight, as the construction noise and vibrations would be more likely to keep any coast horned lizards from approaching too close to the active site during the day. The construction work may also lead to dispersal of individuals from the area, which could lead to reduced fitness of those individuals if the adjacent habitat is less optimal. This dispersal could also lead to an increased risk of predation or competition if any animals are forced to relocate to unfamiliar territory.

General practices that would reduce short-term or long-term effects to coast horned lizard include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to coast horned lizard include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Golden Eagle

Under Segment A, there may be direct or indirect effects to golden eagle, expected to have a possibility of occurring due to recent occurrences in areas along the edges of the Tehachapi Mountains south of this segment. There are no reported golden eagle occurrences along Segment A. While this area does not contain suitable nesting habitat for this species, suitable foraging habitat is present. Human activity should not disrupt nesting activity. Construction of new towers and grading of new or existing access roads will cause habitat loss and degradation within the Project area. Localized construction presence may dissuade golden eagles from foraging within areas near active construction. Addition of a new transmission line on this segment is not expected to appreciably increase the risk of collision or electrocution because it would parallel two existing transmission lines. The new transmission line would be constructed to meet the latest avian protection standards (APLIC 2006).

General practices that would reduce short-term or long-term effects to bald eagle include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to bald eagle include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-17 (Protect the bald eagle and golden eagle).

Avian Risk

Segment A poses a low risk to avian species, according to results of the Avian Risk Assessment. The only risk factor identified within this segment was average wind speeds greater than 16.8 mph at 50 meters above the ground, which was applicable for the entire segment. Higher wind speeds are believed to result in lower numbers of avian migrants. Potential effects as a result of these factors include collision and electrocution of birds at transmission lines. GP-8 and GP-11 would protect local and migratory bird species that may occur and reduce short-term and long-term effects to migratory bird species in the BRRTP area, respectively, while applicable mitigation measures include BIO-3 (Incorporate riparian area avoidance and permit measures) and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Other Wildlife

Other common species may occur within Segment A such as coyote (*Canis latrans*), kangaroo rat (*Dipodomys* spp.), white-tailed antelope ground squirrel (*Ammospermophilus leucurus*), and various unknown migratory bird species. Construction on Segment A may result in injury, mortality, or displacement of any of these species due to crushing during grading of access roads or tower sites; loss of habitat or reduction in food availability during construction; and disturbance from construction noise and vibration.

Vegetation

Sections of Segment A cross BLM lands; surveys within this area consisted of mapping vegetation communities. The BLM lands crossed by the proposed alternative transmission line routes are located on the lower east-facing slopes of the easternmost Transverse Ranges, the northernmost slopes of the San Gabriel Mountains, and within the western edge of the Mojave Desert. The vegetation types in this area are characteristic of dry interior desert-influenced mountain ranges and of the Mojave Desert. Holland vegetation types were assigned during the mapping exercise, so that the vegetation mapping would be consistent with mapping of the ANF lands.

The vegetation types mapped within BLM lands include the following three natural upland vegetation types:

- Mojave Creosote Bush Scrub
- Mojave Wash Scrub
- Joshua Tree Woodland

Invasive weeds found on the Segment A corridor include:

- Cheatgrass* (*Bromus tectorum*)
- Indian hedgemustard (*Sisymbrium orientale*)
- Red brome* (*Bromus madritensis*)

* Indicates species that were too widespread and numerous to map.

No special-status plants are known to be present on Segment A.

The 10 special-status plants that are likely to occur within Segment A include:

- Alkali mariposa lily (*Calochortus striatus*)
- White pygmy-poppy (*Canbya candida*)
- Red Rock tarplant (*Deinandra arida*)
- Mojave tarplant (*Deinandra mohavensis*)
- Barstow woolly sunflower (*Eriophyllum mohavense*)
- Red Rock poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*)
- Pale-yellow layia *(Layia heterotricha*)
- Creamy blazing star (*Mentzelia tridentate*
- Charlotte's phacelia (*Phacelia nashiana*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)

The 25 special-status plants that possibly occur within Segment A include:

- California androsace (*Androsace elongata* ssp. *acuta*)
- Nevin's barberry (*Berberis nevinii*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Peirson's morning-glory (*Calystegia peirsonii*)
- Mojave Indian paintbrush (*Castilleja plagiotoma*)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)
- White-bracted spineflower *(Chorizanthe xanti* var. *leucotheca*)
- Desert cymopterus (*Cymopterus deserticola*)
- Slender-horned spineflower (*Dodecahema leptoceras*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)
- Southern California black walnut (*Juglans californica*)
- Ocellated lily (*Lilium humboldtii* ssp. *ocellatum*)
- Peirson's lupine (*Lupinus peirsonii*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Ojai navarretia (*Navarretia ojaiensis*)
- Short-joint beavertail (*Opuntia basilaris* var. *brachyclada*)
- White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)
- Coulter's matilija poppy (*Romneya coulteri*)
- Chaparral ragwort (*Senecio aphanactis*)
- San Bernardino aster (*Symphyotrichum defoliatum*)
- Lemmon's syntrichopappus (*Syntrichopappus lemmonii*)

The four special-status plants that are unlikely to occur within Segment A include:

- Bear Valley woollypod (*Astraglus lentiginosus* var. *sierrae*)
- Slender mariposa lily (*Calochortus clavatus* var. *gracilis*)
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- California satintail (*Imperata brevifolia*)

Direct impacts to special-status plant species may occur in a variety of ways, including the direct removal of plants during the course of construction. Clearing and grading associated with the placement of towers or the grading of access or spur roads may also result in the alteration of soil conditions, including the loss of native seed banks and changes to the topography and drainage of a site such that the capability of the habitat to support special-status species is impaired. Indirect impacts include the creation of conditions that are favorable for the invasion of weedy exotic species that prevent the establishment of desirable vegetation and may adversely affect wildlife. Dust from road travel, grading, or other construction activities may also reduce photosynthetic capacity in plants over time or inhibit reproduction by physically coating reproductive structures or excluding insect pollinators. Soil disturbance may also result in the spread of invasive plant species. Trampling due to foot or vehicular traffic could result in soil compaction if it occurs repeatedly within any specific area; soil compaction may in turn lead to reduced water absorption and increased runoff, potentially contributing to an increase in non-native plant species, which could be more tolerant of these conditions.

The potential introduction or spread of noxious and invasive weeds would occur primarily during construction activities, but would also continue to occur during operation and maintenance phases of the Project. The introduction of noxious and invasive weeds would be related to ground disturbance from clearing and grading, expansion of access roads, construction of spur roads, and road maintenance; the use of vehicles, construction equipment, or earth materials contaminated with non-native plant seed; use of straw bales or wattles that contain seeds of non-native plant species; and enhanced public access to the Project corridor during and after construction. Additionally, weed seeds are often spread on equipment or clothing by construction or maintenance personnel. This would provide many avenues for new propagules (any part of a plant that may generate a new individual plant) to be carried into areas that previously were isolated from sources of noxious weed seeds. Direct impacts associated with the introduction of noxious weeds could occur when noxious weeds become established in an area. These invasive plant species can cause a permanent or long-lasting change to the environment by increasing vegetative cover, creating a dense layer that prevents native vegetation from germinating, altering the edaphic and hydrological conditions through nitrogen fixation (as in Spanish broom), or may drain the water table (as in giant reed). Noxious weeds can create such an unfavorable environment for wildlife that associate, mutualistic species necessary for native plant life cycles, such as seed dispersers, fossorial mammals, or pollinators, are lost from the area. Indirect impacts attributed to the colonization of noxious weeds could include a gradual decrease in natural biodiversity, as noxious weed infestations may extirpate native plant populations.

Operational impacts would also include trampling or crushing due to public use of new or improved spur roads and access roads, increased erosion, and the spread and colonization of noxious weeds. Other operational impacts include removal and trimming of vegetation during maintenance activities. Restoration activities may inadvertently lead to negative effects on special-status plant species, should they be present during construction. For instance, seed collection from native plants may result in the unintentional trampling of smaller listed species should they be present in the area, or in the removal of seeds from listed species. Effective preconstruction flagging of these species would assist in reducing the likelihood of incidental effects during seed collection or even weed removal. Weed removal may also lead to species that are not non-native being unintentionally treated or removed.

General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-24, GP-25, GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49.

Mitigation measures that would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat).

With GPs and Mitigation Measures applied, many of the initial impacts of high were reduced to medium or low impact (Figure 5-1). Below is a list of Mitigation Measures that would reduce potential impacts to Segment A.

TABLE 19. MITIGATION MEASURES APPLICABLE TO SEGMENT A

Wildlife Species	Mitigation Measures		Vegetation Community/Plant Species	Mitigation Measures
Desert Tortoise	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-23		Mojave Creosote Bush Scrub	AIR-2a, BIO-1, BIO-2, BIO-13
Mohave Ground Squirrel and Southern Grasshopper Mouse	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20		Mojave Wash Scrub	AIR-2a, BIO-1, BIO-2, BIO-13
Kit Fox	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20		Joshua Tree Woodland	AIR-2a, BIO-1, BIO-2, BIO-13
Burrowing Owl	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-8, BIO-16		Special-status Plant Species	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-13
Pallid Bat and Western Mastiff Bat	HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-21			
American Badger	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20			
Coast (San Diego) Horned Lizard	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-22			
Golden Eagle	HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-7, BIO-11, BIO-17			
Raptors and Other Migratory Birds	HYD-1, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-8, BIO-11			
General Wildlife	BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-8, BIO-11			

TABLE 20. BIOLOGICAL RESOURCES FOUND WITHIN SEGMENT A AND POTENTIAL ACREAGE OF DISTURBANCE

	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Known Special Status Wildlife Present				
Desert Tortoise	21.6	21.6	3.0	3.0
Wildlife Range				
Desert Tortoise	233.0	233.0	31.9	31.9
Mohave Ground Squirrel	75.3	75.3	10.3	10.3

	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Avian Assessment Impacts				
Low	77.7	77.7	10.6	10.6
Joshua Trees Present				
Yes	11.7	11.7	1.6	1.6
Vegetation				
Joshua Tree Woodland	5.6	5.6	0.7	0.7
Mojave Creosote Bush Scrub	73.2	73.2	9.0	9.0
Mojave Wash Scrub	8.3	8.3	1.0	1.0

7.1.2 Segment B

The northern limit of Segment B is located at N35°05.247, W118°11.911 and runs at a bearing of 193° true for 21 miles. At N34°49.167, W118°20.642, its bearing turns to 180° and it continues for 6 miles before ending at N34°44.231, W118°20.600. The predominant plant community for the first 15 miles of Segment B is Mojave creosote scrub with pockets of Mojave mixed woody scrub. Patches of rabbitbrush scrub and desert native grassland were observed in small quantities. Agricultural areas are found from MP 11.8 to MP 14.6. Agricultural lands spanning MP 16 to MP 23 contain small pockets of desert saltbrush scrub. The last two miles of the southern portion is predominantly composed of non-native annual grassland. Multiple washes cross the link at various points. Disturbance types in Segment B included over-grazing, off-highway vehicle (OHV) use, and refuse dumping and development (mostly roadways). The same 230 kV transmission lines found in Segment A continue through the entirety of this route. Evidence of high- to medium-intensity grazing was observed from miles 0 to 11.8. A high degree of disturbance from off-highway vehicle use is present from MP 0 to MP 2. Pipelines intersect the route at MP 5 to MP 6.

Wildlife

American Badger

Under Segment B, there would be direct or indirect construction impacts to American badger, expected to be present based on the presence of two active burrows and one inactive burrow within two miles of the centerline, identified in 2007 by LSA (LSA 2007e), as well as reported accounts (CDFG 2010). It is estimated that the maximum permanent disturbance to American badger occupied habitat would be 1.5 acres, while the maximum temporary disturbance would be 11.1 acres. Tower construction and grading of new or existing access roads will result in habitat and vegetation loss, which may result in a temporary increase in food availability due to reduced cover for rodents and other species that badgers prey upon. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-20, will identify any possible active or inactive American badger burrows, but some burrows may still go unnoticed and may therefore be crushed or damaged by vehicles, heavy equipment, or trampling. This may in turn result in the injury or mortality of one or more badgers. Badgers may be displaced by construction activity, including noise and vibrations, but because their home ranges can be up to 400 acres for females and up to 600 acres for males, it is likely that any displaced individuals would be able to expand outside of the construction zone without a significant impact on their well-being.

General practices that would reduce short-term or long-term effects to American badger include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to American badger include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Burrowing Owl

Under Segment B, there would be direct or indirect construction impacts to burrowing owl, expected to be likely to occur based on the identification of numerous active burrowing owl burrows within 0.5 mile of this segment by LSA in 2007 (LSA 2007d). Tower construction and grading of new or existing access roads will result in habitat fragmentation and vegetation loss, which will result in a degradation of the overall habitat quality, making it less appealing and less suitable for burrowing owls. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-16, will identify any possible active or inactive burrowing owl burrows, but some burrows may still go unnoticed or be incorrectly identified as rodent-only burrows and may therefore be crushed or damaged by vehicles, heavy equipment, or trampling. This may result in the injury or mortality of one or more owls if they are present. Where construction occurs near residential areas, it may draw the attention of scavengers or domesticated animals, resulting in an increased risk of predation. Because burrowing owls are most active at dusk and dawn (Zarn 1974) and have a reduced capability to forage at night (Voous 1988), the presence of humans, vehicles, and heavy equipment may disrupt any foraging or nesting practices during construction hours.

General practices that would reduce short-term or long-term effects to burrowing owl include GP-8, GP-23, GP-24, GP-25, GP-34, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to burrowing owl include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-16 (Protect burrowing owl).

Desert Tortoise

Under Segment B, there may be direct or indirect construction impacts to desert tortoise, expected to have a possibility to occur based on desert habitat surveys conducted in 2008 by POWER (POWER 2009c). Project construction could result in direct adverse effects to desert tortoise. Injury or mortality could occur to tortoises underground in undetected burrows that are driven over by construction vehicles or equipment, or to tortoises that are under vegetation and are not detected during construction or pre-construction surveys. Permanent habitat loss would occur as a result of the construction of new transmission towers and new access roads, resulting in decreased forage and vegetative cover for tortoises in the area. Because tortoises may use desert washes as habitat, excessive disturbance to these areas as a result of construction would degrade and possibly reduce habitat further. During construction, increased predation could occur from ravens and coyotes, which are attracted to human activity to scavenge for food. Tortoises that wander too close to construction would require manual relocation by an authorized biologist and would likely undergo stress during the movement process and possibly afterward, until they are able to find suitable shelter again. Since vegetation re-growth is a slow process in this arid climate, creosote bushes large enough to provide good cover would take a decade to revegetate the area.

Habitat loss and reduced vegetation may subject desert tortoises to increased predation from aerial predators by decreasing the amount of cover available to hide under. Additionally, construction of a new transmission line would increase nesting and perching opportunities for raptors, increasing the likelihood of predation on desert tortoises. After construction is completed, injury or mortality from vehicle collisions may occur during maintenance activities and security patrols.

General practices that would reduce short-term or long-term effects to desert tortoise include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to desert tortoise include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-23 (Protect desert tortoise and habitat loss).

Desert Kit Fox

Under Segment B, there would be direct or indirect construction impacts to desert kit fox, expected to be likely to occur due to numerous signs identified by POWER during 2008 desert habitat surveys (POWER 2009c). Tower construction and grading of new or existing access roads will result in habitat loss, which may result in a temporary increase in food availability by providing less cover for wildlife that the desert kit fox preys upon. Habitat degradation may also occur as a secondary effect of adjacent habitat loss or general construction access. This could result from the spread of non-native vegetation in the construction or access area or from excessive dust from construction in the desert area, necessitating the implementation of non-native weed prevention and dust control measures. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-20, will identify any possible active or inactive desert kit fox burrows, but any unnoticed burrows may be crushed during construction, possibly resulting in injury of mortality of one or more kit foxes that may be present. Nearby kit foxes may be scared away from the area or to other burrows by construction noise or vibrations, but as human presence will only be temporary, it is expected that this would result in a short-term effect.

General practices that would reduce short-term or long-term effects to desert kit fox include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to desert kit fox include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Loggerhead Shrike

Under Segment B, there may be direct or indirect effects to loggerhead shrike, expected to be likely to occur due to availability of suitable habitat and sightings on Segments A and C during 2008 desert habitat surveys (POWER 2009c). Tower construction and grading of new or existing access roads would result in habitat and vegetation loss. This would cause habitat degradation which may make the area less appealing to loggerhead shrike individuals. It is expected that preconstruction surveys and/or biological monitoring will locate any nests within shrubs or trees in the area, although if any nests are not located, this could result in injury or mortality of individuals. Construction noise and human presence may cause birds to disperse from the area, potentially abandoning a nest if any birds are nesting nearby during construction.

General practices that would reduce short-term or long-term effects to loggerhead shrike include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to loggerhead shrike include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Pallid Bat, Townsend's Big-eared Bat, and Western Mastiff Bat

Under Segment B, there may be direct or indirect construction impacts to pallid bat, Townsend's big-eared bat, and western mastiff bat. Pallid bat is expected to be likely to occur on this segment based on potentially-increased availability of foraging habitat around agricultural fields and roosting habitat around the residences on this segment. Townsend's big-eared bat has a possibility of occurring due to foraging habitat and some roosting possibilities around residences, but there is a general lack of rocky roosting habitat along this segment. Western mastiff bat is expected to be likely to occur on this segment based on desert shrub foraging habitat and two existing transmission lines for roosting habitat. Tower construction and grading of new or existing access roads would result in loss of foraging habitat and degradation in habitat quality, although tower construction may provide additional roosting habitat for the western mastiff bat. Pallid bats and Townsend's big-eared bats in particular are sensitive to human disturbance, and construction during summer months, when bat activity is higher, may cause a greater degree of disturbance to the bats, potentially leading to their abandonment of the area (Vaughan and O'Shea 1976, Piaggio 2005). This can indirectly lead to injury or mortality if it results in encounters with equipment or in decreased fitness at a new location due to unfamiliarity. The bats would likely return to the same roost the following season if it were still available (B. Doering personal communication 2011). Mating for pallid bats occurs from October to February, birth from April to July, and final weaning in August; mating in Townsend's big-eared bats generally occurs between October and February, with birth between May and July; and mating in western mastiff bats typically begins in early March with birth ending in September (Reid 2006). Construction during certain time periods of these windows may be more disturbing to some bat species than others, if they are present.

Should a bat roost be disturbed by construction, complete abandonment of the roost may result, particularly for more sensitive species like pallid bats or Townsend's big-eared bats. This may lead to complete nesting failure for the season, resulting in a loss of that year's new bat births. Because bats are mainly nocturnal, any night construction would disturb them, disrupting foraging and potentially leading to injuries. Disruption of hibernation is unlikely given the generally warm winters in Southern California. McNab (1974) suggests that only bats that are both small and do not cluster in groups can hibernate when the environmental temperature is above 14°C (57.2°F). Pallid bats may roost alone or in groups from two to several hundred and, although they will hibernate in cold parts of their range, they overwinter in coastal California (Rambaldini 2005). They have been reported to remain active at temperatures between -5°C (23°F) and 10°C (50°F). Townsend's big-eared bats may hibernate in groups of single individuals to several hundred; in some areas, mainly in the eastern U.S., they may hibernate in groups up to several thousand (Piaggio 2005). Western mastiff bats cluster in groups of 30 to several hundred and do not undergo long periods of hibernation, instead remaining periodically active throughout the winter (Siders 2005). It is likely that bats in the Project area would periodically enter states of torpor but would generally remain relatively active compared to bats in colder parts of the country, where hibernation is more feasible.

General practices that would reduce short-term or long-term effects to special-status bat species include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short-term or long-term effects to special-status bat species include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-21 (Protect sensitive bat species).

Mohave Ground Squirrel and Southern Grasshopper Mouse

Under Segment B, there may be direct or indirect construction impacts to Mohave ground squirrel and southern grasshopper mouse. Mohave ground squirrel is expected to be likely to occur due to availability of suitable habitat and a recent recorded occurrence within one mile (CDFG 2010). Southern grasshopper mouse is expected to have a possibility of occurring based on availability of suitable habitat. Tower construction and grading of new or existing access roads will result in habitat loss, resulting in a decrease in food availability for these species and possibly an increase in predation risk due to reduced vegetation cover. Preconstruction surveys will identify any possible Mohave ground squirrel and southern grasshopper mouse burrows, but as ground squirrel burrows are often dug under large shrubs (Leitner et al. 1995, Reid 2006), they may be difficult to see, leaving a possibility that burrows will go unnoticed. These burrows may be crushed during construction, resulting in possible injury or death to one or more individuals and a reduction in suitable hiding places. Ground squirrels or grasshopper mice may be scared out of their burrows by construction noise or vibration, but because both species may maintain multiple home and accessory burrows (Reid 2006), it is not expected that this would result in the complete displacement of any individuals unless they happen to be currently residing only in the ROW. Displacement of either of these species from burrows may lead to injury or mortality due to exposure to predation from raptors or other predators. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any small mammals in the area, which may fall into them.

General practices that would reduce short-term or long-term effects to Mohave ground squirrel and southern grasshopper mouse include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Mohave ground squirrel and southern grasshopper mouse include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Coastal Rosy Boa

Under Segment B, there may be direct or indirect effects to coastal rosy boa, expected to have a possibility to occur based on availability of suitable habitat. Construction of new towers and access roads will result in vegetation and habitat loss, and any movement of rocky areas for construction purposes may destroy additional habitat and refuges. Moving rocks may also result in injury or mortality if any rosy boas are present in between the rocks or on the ground adjacent to them. Excessive disturbance to washes may have additional impacts to habitat, as coastal rosy boas are attracted to permanent and intermittent streams (Stebbins 2003). Disrupting rodents or herpetofauna could also cause reductions in food supply for any boas that may be in or near the ROW, while scaring boas into the open may cause increases in predation. Finally, individuals may be unintentionally run over by construction traffic should they be basking on the ground and undetected.

General practices that would reduce short-term or long-term effects to coastal rosy boa include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to coastal rosy boa include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Swainson's Hawk and Golden Eagle

Under Segment B, there may be direct or indirect effects to Swainson's hawk, expected to have a possibility to occur based on multiple reported sightings, two with young, within three miles of the proposed transmission line (CDFG 2010). Golden eagle is expected to be present based on multiple recorded sightings within the Alta-Oak Creek Mojave Project area (Kern County 2009). Construction of new towers and grading of new or existing access roads would result in vegetation and habitat loss, including some temporary loss of agricultural habitat for towers that pass through the agricultural fields on the southern end of the alignment. Direct injury or mortality from construction is not expected based on the most recent nesting locations and nesting habits, although both species will be excluded from foraging near active construction by the heavy construction presence as towers are placed. Should hawks nest closer to the proposed ROW they may be displaced by construction disturbance depending on the amount of ambient disturbance in the area. If this is the case, adults and/or their young would likely need to relocate, which could possibly result in indirect injury or mortality as they move to inhabit new locations. Power line design could result in injury or mortality to hawks or eagles that are flying through the area or even perching on the towers, and appropriate tower design and protective measures will need to be enforced to prevent this. Birds, particularly raptors, are also known to perch, roost, or even nest on transmission structures (APLIC 2006). However, addition of a new transmission line on this segment is not expected to appreciably increase the risk of collision or electrocution because it would parallel two existing transmission lines.

General practices that would reduce short-term or long-term effects to Swainson's hawk and golden eagle include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Swainson's hawk and golden eagle include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-17 (Protect the bald eagle and golden eagle).

Avian Risk

Segment B poses a low risk to avian species, according to the Avian Risk Report. Several miles of this segment are known to have average wind speeds greater than 16.8 mph, while several other miles are within 0.5 mile of recorded wetland data and/or are between separate habitat usage types. The existing lines in this segment also converge or diverge several times. Higher wind speeds are believed to result in lower numbers of avian migrants, wetlands are routinely used as takeoff and landing points for birds, habitat separation can lead to collisions for birds flying between different areas (such as wetlands and agricultural areas), and converging and diverging transmission lines can increase collision risk by causing birds to perform multiple evasive maneuvers. Potential effects as a result of these factors include collision and electrocution of birds at transmission lines. GP-8 and GP-11 would protect local and migratory bird species that may occur and reduce short-term and long-term effects to migratory bird species in the BRRTP area, respectively, while applicable mitigation measures include BIO-3 (Incorporate riparian area avoidance and permit measures) and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Other Wildlife

Other common species which may occur in Segment B include species such as desert woodrat (*Neotoma lepida*), coyote, deer, sheep (*Ovis aries*), thistledown velvet ant (*Dasymutilla gloriosa*), western whiptail (*Cnemidophorus tigris*), side-blotched lizard (*Uta stansburiana*), and various migratory bird species. Construction on Segment B may result in injury, mortality, or displacement of any of these species due to crushing or collision during grading of access roads or tower sites; loss of habitat or reduction in food availability during construction; and disturbance from construction noise and vibration leading to dispersal.

Vegetation

Sections of Segment B crosses BLM lands; surveys within this area consisted of mapping vegetation communities. The BLM lands crossed by the proposed alternative transmission line routes are located on the lower east-facing slopes of the easternmost Transverse Ranges, the northernmost slopes of the San Gabriel Mountains and within the western edge of the Mojave Desert. The vegetation types in this area are characteristic of dry interior desert-influenced mountain ranges and of the Mojave Desert. Holland vegetation types were assigned during the mapping exercise, so that the vegetation mapping would be consistent with mapping of the ANF lands.

The vegetation types mapped within include the following six natural upland vegetation types:

- Mojave Creosote Bush Scrub
- Joshua Tree Woodland

In addition, Segment B contains both agricultural land and California annual grassland habitats.

No special-status plants are known to be present on Segment B.

The 26 special-status plants that are likely to occur within Segment B include:

- Nevin's barberry (*Berberis nevinii*)
- Round-leaved filaree (*California macrophylla*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Alkali mariposa lily (*Calochortus striatus*)
- Peirson's morning-glory (*Calystegia peirsonii*)
- White pygmy poppy (*Canbya candida*)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)
- White-bracted spineflower *(Chorizanthe xanti* var. *leucotheca*)
- Red rock tarplant (*Deinandra arida*)
- Mojave tarplant (*Deinandra mohavensis*)
- Slender-horned spineflower (*Dodecahema leptoceras*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Barstow woolly sunflower (*Eriophyllum mohavense*)
- Red Rock poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Pale-yellow layia *(Layia heterotricha*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Creamy blazing star (*Mentzelia tridentata*)
- Ojai navarretia (*Navarretia ojaiensis*)
- Short-joint beavertail (*Opuntia basilaris* var. *brachyclada*)
- Charlotte's phacelia (*Phacelia nashiana*)
- White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)
- Chaparral ragwort (*Senecio aphanactis*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- San Bernardino aster (*Symphyotrichum defoliatum*)

The 13 special-status plants that could possibly occur within Segment B include:

- California androsace (*Androsace elongata* ssp. *acuta*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Mojave Indian paintbrush (*Castilleja plagiotoma*)
- Southern tarplant (*Centromadia parryi* ssp. *australis*)

- Desert cymopterus (*Cymopterus deserticola*)
- Blochman's dudleya *(Dudleya blochmaniae* ssp. *blochmaniae)*
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)
- Southern California black walnut (*Juglans californica*)
- Ocellated lily (*Lilium humboldtii* ssp. *ocellatum*)
- Peirson's lupine (*Lupinus peirsonii*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)
- Coulter's matilija poppy (*Romneya coulteri*)
- Lemmon's syntrichopappus (*Syntrichopappus lemmonii*)

The five special-status plants that are unlikely to occur within Segment B include:

- Bear Valley woollypod *(Astragalus lentiginosus* var. *sierra)*
- Slender mariposa lily (*Calochortus clavatus* var. *gracilis*)
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- California satintail (*Imperata brevifolia*)
- Gairdner's Yampah (*Perideridia gairdneri* ssp. *gairdneri*)

Direct impacts to special-status plant species may occur in a variety of ways, including the direct removal of plants during the course of construction. Clearing and grading associated with the placement of towers or the grading of access or spur roads may also result in the alteration of soil conditions, including the loss of native seed banks and changes to the topography and drainage of a site such that the capability of the habitat to support special-status species is impaired. Indirect impacts include the creation of conditions that are favorable for the invasion of weedy exotic species that prevent the establishment of desirable vegetation and may adversely affect wildlife. Dust from road travel, grading, or other construction activities may also reduce photosynthetic capacity in plants over time or inhibit reproduction by physically coating reproductive structures or excluding insect pollinators. Soil disturbance may also result in the spread of invasive plant species. Trampling due to foot or vehicular traffic could result in soil compaction if it occurs repeatedly within any specific area; soil compaction may in turn lead to reduced water absorption and increased runoff, potentially contributing to an increase in non-native plant species, which could be more tolerant of these conditions.

The potential introduction or spread of noxious and invasive weeds would occur primarily during construction activities, but would also continue to occur during operation and maintenance phases of the Project. The introduction of noxious and invasive weeds would be related to ground disturbance from clearing and grading, expansion of access roads, construction of spur roads, and road maintenance; the use of vehicles, construction equipment, or earth materials contaminated with non-native plant seed; use of straw bales or wattles that contain seeds of non-native plant species; and enhanced public access to the Project corridor during and after construction. Additionally, weed seeds are often spread on equipment or clothing by construction or maintenance personnel. This would provide many avenues for new propagules (any part of a plant that may generate a new individual plant) to be carried into areas that previously were isolated from sources of noxious weed seeds. Direct impacts associated with the introduction of noxious weeds could occur when noxious weeds become established in an area. These invasive plant species can cause a permanent or long-lasting change to the environment by increasing vegetative cover, creating a dense layer that prevents native vegetation from germinating, altering the edaphic and hydrological conditions through nitrogen fixation (as in Spanish broom), or may drain the water table (as in giant reed). Noxious weeds can create such an unfavorable environment for wildlife that associate, mutualistic species necessary for native plant life cycles, such as seed dispersers, fossorial mammals, or pollinators, are lost from the area. Indirect impacts attributed to the colonization of noxious weeds could include a gradual decrease in natural biodiversity, as noxious weed infestations may extirpate native plant populations.

Operational impacts would also include trampling or crushing due to public use of new or improved spur roads and access roads, increased erosion, and the spread and colonization of noxious weeds. Other operational impacts include removal and trimming of vegetation during maintenance activities. Restoration activities may inadvertently lead to negative effects on special-status plant species, should they be present during construction. For instance, seed collection from native plants may result in the unintentional trampling of smaller listed species should they be present in the area, or in the removal of seeds from listed species. Effective preconstruction flagging of these species would assist in reducing the likelihood of incidental effects during seed collection or even weed removal. Weed removal may also lead to species that are not non-native being unintentionally treated or removed.

General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-24, GP-25, GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat).

With GPs and Mitigation Measures applied many of the initial impacts of high were reduced to medium or low impact. Below is a list of Mitigation Measures that would reduce potential impacts to Segment B.

TABLE 21. MITIGATION MEASURES APPLICABLE TO SEGMENT B

Wildlife Species	Mitigation Measures		Vegetation Community/Plant Species	Mitigation Measures
Desert Tortoise	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-23		Mojave Creosote Bush Scrub	AIR-2a, BIO-1, BIO-2, BIO-13
Mohave Ground Squirrel and Southern Grasshopper Mouse	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20		Joshua Tree Woodland	AIR-2a, BIO-1, BIO-2, BIO-13
Kit Fox	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20			
Burrowing Owl	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-8, BIO-16			
Pallid Bat and Western Mastiff Bat	HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-21			
American Badger	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20			
Coastal Rosy Boa	AIR-2a, HYD-1, HYD-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-22			
Golden Eagle	HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-7, BIO-11, BIO-17			
Raptors and Other Migratory Birds	HYD-1, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-8, BIO-11			
General Wildlife	BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-8, BIO-11			

TABLE 22. BIOLOGICAL RESOURCES FOUND WITHIN SEGMENT B AND POTENTIAL ACREAGE OF DISTURBANCE

	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Known Special Status Wildlife Present				
American Badger	11.1	11.1	1.5	1.5
Wildlife Range				
Desert Tortoise	155.3	155.3	21.3	21.3
Avian Assessment Impacts				
Low	155.3	155.3	21.3	21.3
Joshua Trees Present				
Yes	65.4	65.4	9.0	9.0
Vegetation				
Agricultural Land	54.2	54.2	6.7	6.7
California Annual Grassland	13.2	13.2	1.6	1.6
Joshua Tree Woodland	28.7	28.7	3.5	3.5
Mojave Creosote Bush Scrub	76.8	76.8	9.5	9.5

7.1.3 Segment C

Segment C is located at its northernmost and southernmost points at N35°05.247, W118°11.909 and N34°52.684, W118°27.503, respectively. The Segment is approximately 21 miles long and the predominant plant communities are creosote bush scrub and Joshua tree woodland, with pockets of Mojave mixed scrub and semi-desert chaparral located at its northern and southern ends, respectively. The First Los Angeles Aqueduct and the Second Los Angeles Aqueduct are concomitant with the route for approximately 18 miles beginning at its northern limit. From mile post (MP) 17 until MP 21.2, the aqueduct changes course and is only associated with the survey corridor from MP 20.2 to MP 20.6. Two aqueduct service roads are responsible for the high amount of bare earth within the corridor. Much of the area between the roads and aqueducts is highly disturbed by the presence of construction waste and more recent dumping of household items. Evidence of high-intensity sheep grazing was observed throughout most of this route.

Wildlife

American Badger

Under Segment C, there may be direct or indirect construction impacts to American badger, expected to have a possibility to occur based on the presence of two active burrows identified within 1.5 miles of this segment during a 2008 desert habitat survey by POWER (POWER 2009c) and a 2007 survey for Antelope-Pardee by LSA (LSA 2007e). Tower construction and grading of new access roads will result in habitat and vegetation loss, which may result in a temporary increase in food availability due to reduced cover for rodents and other species that badgers prey upon. While there are no existing parallel transmission lines on Segment C, the underground Los Angeles Aqueduct runs roughly alongside the proposed segment, and there is already a large area of disturbance in this segment with the aqueduct and the associated access road. Habitat loss due to access road construction may be less in this segment due to the existing wide corridor of disturbance. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-20, will identify any possible active or inactive American badger burrows, but some burrows may still go unnoticed and may therefore be crushed or damaged by vehicles, heavy equipment, or trampling. This may in turn result in the injury or mortality of one or more badgers. Badgers may be displaced by construction activity, including noise and vibrations, but because their home ranges can be up to 400 acres for females and up to 600 acres for males, it is likely that any displaced individuals would be able to expand outside of the construction zone without a significant impact on their well-being.

General practices that would reduce short-term or long-term effects to American badger include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to American badger include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Desert Tortoise

Under Segment C, there may be direct or indirect construction impacts to desert tortoise, expected to have a possibility to occur based on desert habitat surveys conducted in 2008 by POWER (POWER 2009c). Project construction could result in direct adverse effects to desert tortoise. Injury or mortality could occur to tortoises underground in undetected burrows that are driven over by construction vehicles or equipment, or to tortoises that are under vegetation and are not detected during construction or pre-construction surveys. Permanent habitat loss would occur as a result of the construction of new transmission towers and new access roads, resulting in decreased forage and vegetative cover for tortoises in the area. Because tortoises may use desert washes as habitat, excessive disturbance to these areas as a result of construction would degrade and possibly reduce habitat further. During construction, increased predation could occur from ravens and coyotes, which are attracted to human activity to scavenge for food. Tortoises that wander too close to construction would require manual relocation by an authorized biologist and would likely undergo stress during the movement process and possibly afterward, until they are able to find suitable shelter again. Since vegetation re-growth is a slow process in this arid climate, creosote bushes large enough to provide good cover would take a decade to revegetate the area.

Habitat loss and reduced vegetation may subject desert tortoises to increased predation from aerial predators by decreasing the amount of cover available to hide under. Additionally, construction of a new transmission line would increase nesting and perching opportunities for raptors, increasing the likelihood of predation on desert tortoises. After construction is completed, injury or mortality from vehicle collisions may occur during maintenance activities and security patrols.

General practices that would reduce short-term or long-term effects to desert tortoise include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to desert tortoise include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-23 (Protect desert tortoise and habitat loss).

Loggerhead Shrike

This species, while not included in the direct construction corridor impacts, has nevertheless been observed within Segment C. Under Segment C, there would be direct or indirect effects to loggerhead shrike, expected to be present due to multiple sightings during 2008 desert habitat surveys (POWER 2009c). Tower construction and grading of new or existing access roads would result in habitat and vegetation loss. This would cause habitat degradation which may make the area less appealing to loggerhead shrike individuals. Segment C currently has no existing parallel transmission lines on it in the general corridor that the proposed ROW would follow. However, the underground Los Angeles Aqueduct runs roughly alongside the proposed alignment, and there is already a large cleared area of linear disturbance in this area with the aqueduct and the associated access road. Habitat loss due to access road construction may be less in this segment due to the existing wide corridor of disturbance, which is parallel and adjacent to the proposed Segment C corridor through this area. It is expected that preconstruction surveys and/or biological monitoring will locate any nests within shrubs or trees in the area, although if any nests are not located, this could result in injury or mortality of individuals. Construction noise and human presence may cause birds to disperse from the area, potentially abandoning a nest if any birds are nesting nearby during construction.

General practices that would reduce short-term or long-term effects to loggerhead shrike include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to loggerhead shrike include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Coast (San Diego) Horned Lizard

This species, while not considered in the direct construction corridor impacts, is nevertheless expected to be present in the general area. Under Segment C, there would be direct or indirect effects to coast horned lizard, expected to be present due to a sighting during POWER's 2008 desert habitat assessment surveys. Tower construction and grading of new or existing access roads would result in habitat and vegetation loss, and may result in direct injury or mortality of individuals. While there is no existing transmission line running along Segment C, there is already disturbance from the underground Los Angeles Aqueduct. Removal of chaparral for the grading of access roads or tower sites would reduce or degrade suitable habitat for this species. Additionally, any coast horned lizards that go undetected by preconstruction surveys—in compliance with mitigation measure BIO-22—and are present under vegetation, on roads, in streambed crossings, or in burrows, may be crushed by foot traffic, vehicles, or heavy equipment. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any coast horned lizards which may fall into them. It is expected that the risk of falling into an open hole would be greater overnight, as the construction noise and vibrations would be more likely to keep any coast horned lizards from approaching too close to the active site during the day. The construction work may also lead to dispersal of individuals from the area, potentially leading to an increased risk or predation or competition if any animals are forced to relocate to unfamiliar territory.

General practices that would reduce short-term or long-term effects to coast horned lizard include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to coast horned lizard include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Desert Kit Fox

Under Segment C, there would be direct or indirect construction impacts to desert kit fox, expected to be likely to occur due to numerous signs identified by POWER during 2008 desert habitat surveys, including several natal dens and a skull (POWER 2009c). Tower construction and grading of new access roads will result in habitat loss, which may result in a temporary increase in food availability by providing less cover for wildlife that the desert kit fox preys upon. While there are no existing parallel transmission lines on Segment C, the underground Los Angeles Aqueduct runs roughly alongside the proposed segment, and there is already a large area of disturbance in this segment with the aqueduct and the associated access road. Habitat loss due to access road construction may be less in this segment due to the existing wide corridor of disturbance. Habitat degradation may also occur as a secondary effect of adjacent habitat loss or general construction access. This could result from the spread of non-native vegetation in the construction or access area or from excessive dust from construction in the desert area, necessitating the implementation of non-native weed prevention and dust control measures. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-20, will identify any possible active or inactive desert kit fox burrows, but any unnoticed burrows may be crushed during construction, possibly resulting in injury of mortality of one or more kit foxes. Kit foxes may be scared away from the area or to other burrows by construction noise or vibrations, but as human presence will only be temporary, it is expected that this would result in a short-term effect.

General practices that would reduce short-term or long-term effects to desert kit fox include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to desert kit fox include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Burrowing Owl

Under Segment C, there would be direct or indirect construction impacts to burrowing owl, expected to be likely to occur based on availability of suitable habitat and one reported sighting of an individual approximately two miles from the existing transmission lines (CDFG 2010). Tower construction and grading of new or existing access roads will result in habitat fragmentation and vegetation loss, which will result in a degradation of the overall habitat quality, making it less appealing and less suitable for burrowing owls. Part of this area along its length is unsuitable for habitat, as the Los Angeles Aqueduct is underground along most of this proposed segment, and the top is cemented across its surface. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-16, will identify any possible active or inactive burrowing owl burrows, but some burrows may still go unnoticed or be incorrectly identified as rodent-only burrows and may therefore be crushed or damaged by vehicles, heavy equipment, or trampling. This may result in the injury or mortality of one or more owls if they are present. Where construction occurs near residential areas, it may draw the attention of scavengers or domesticated animals, resulting in an increased risk of predation. Because burrowing owls are most active at dusk and dawn (Zarn 1974) and have a reduced capability to forage at night (Voous 1988), the presence of humans, vehicles, and heavy equipment may disrupt any foraging or nesting practices during construction hours.

General practices that would reduce short-term or long-term effects to burrowing owl include GP-8, GP-23, GP-24, GP-25, GP-34, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to burrowing owl include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-16 (Protect burrowing owl).

Western Mastiff Bat

Under Segment C, there may be direct or indirect construction impacts to western mastiff bat, expected to have a possibility of occurring on this segment based on desert shrub foraging habitat, but not expected to be roosting due to a lack of existing appropriate roosting habitat. Tower construction and grading of new or existing access roads would result in loss of foraging habitat and degradation in habitat quality, although tower construction may provide additional roosting habitat for this species. Construction during summer months, when bat activity is higher, may cause a greater degree of disturbance to bats, potentially leading to their abandonment of the area (Vaughan and O'Shea 1976, Piaggio 2005). This can indirectly lead to injury or mortality if it results in encounters with equipment or in decreased fitness at a new location due to unfamiliarity. The bats would likely return to the same roost the following season if it were still available (B. Doering personal communication 2011). Mating in western mastiff bats typically begins in early March with birth ending in September (Reid 2006). Construction during these windows may be more disturbing, if they are present.

Should a bat roost be disturbed by construction, complete abandonment of the roost may result. This may lead to complete nesting failure for the season, resulting in a loss of that year's new bat births. Because bats are mainly nocturnal, any night construction would disturb them, disrupting foraging and potentially leading to injuries. Disruption of hibernation is unlikely given the generally warm winters in Southern California. McNab (1974) suggests that only bats that are both small and do not cluster in groups can hibernate when the environmental temperature is above 14°C (57.2°F). Western mastiff bats cluster in groups of 30 to several hundred and do not undergo long periods of hibernation, instead remaining periodically active throughout the winter (Siders 2005). It is likely that bats in the Project area would periodically enter states of torpor but would generally remain relatively active compared to bats in colder parts of the country, where hibernation is more feasible.

General practices that would reduce short-term or long-term effects to western mastiff bat include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short-term or long-term effects to western mastiff bat include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-21 (Protect sensitive bat species).

Mohave Ground Squirrel, Southern Grasshopper Mouse, and Tehachapi Pocket Mouse

Under Segment C, there may be direct or indirect construction impacts to Mohave ground squirrel, southern grasshopper mouse, and Tehachapi pocket mouse, all expected to have a possibility of occurring based on availability of suitable habitat and location of the proposed ROW relative to the species' ranges. There is also one recorded Mohave ground squirrel sighting approximately 2.5 miles from the ROW (CDFG 2010). Tower construction and grading of new or existing access roads will result in habitat loss, resulting in a decrease in food availability for these species and possibly an increase in predation risk due to reduced vegetation cover. Preconstruction surveys will identify any possible burrows, but as ground squirrel burrows are often dug under large shrubs (Leitner et al. 1995, Reid 2006), they may be difficult to see, leaving a possibility that burrows will go unnoticed. These burrows may be crushed during construction, resulting in possible injury or death to one or more individuals and a reduction in suitable hiding places. Ground squirrels or grasshopper mice may be scared out of their burrows by construction noise or vibration, but because both species may maintain multiple home and accessory burrows (Reid 2006), it is not expected that this would result in the complete displacement of any individuals unless they happen to be currently residing only in the ROW. Displacement of any of these species from burrows may lead to injury or mortality due to exposure to predation from raptors or other predators. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any small mammals in the area, which may fall into them. There is currently a relative lack of information known about the ecology of the Tehachapi pocket mouse. It is believed that it is nocturnal and that it hibernates seasonally. It may also enter periods of inactivity when the ambient temperature is exceptionally high or low such as in summer or winter, respectively (CDFG 2008d). It is assumed that impacts to the Tehachapi pocket mouse would be somewhat similar to the impacts that may occur to both ground squirrel and grasshopper mouse.

General practices that would reduce short-term or long-term effects to Mohave ground squirrel, southern grasshopper mouse, and Tehachapi pocket mouse include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Mohave ground squirrel and southern grasshopper mouse, and Tehachapi pocket mouse include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Coastal Rosy Boa

Under Segment C, there may be direct or indirect effects to coastal rosy boa, expected to be likely to occur based on availability of suitable habitat. Construction of new towers and access roads will result in vegetation and habitat loss, and any movement of rocky areas for construction purposes may destroy additional habitat and refuges. Moving rocks may also result in injury or mortality if any rosy boas are present in between the rocks or on the ground adjacent to them. Excessive disturbance to washes may have additional impacts to habitat, as coastal rosy boas are attracted to permanent and intermittent streams (Stebbins 2003). Disrupting rodents or herpetofauna could also cause reductions in food supply for any boas that may be in or near the ROW, while scaring boas into the open may cause increases in predation. Finally, individuals may be unintentionally run over by construction traffic should they be basking on the ground and undetected.

General practices that would reduce short-term or long-term effects to coastal rosy boa include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to coastal rosy boa include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Golden Eagle

Under Segment C, there would be direct or indirect effects to golden eagle, expected to be present based on multiple recorded sightings within the Alta-Oak Creek Mojave Project area (Kern County 2009), Pacific Wind Energy Project area (Kern County 2010a), and PdV Wind Energy Project area (Kern County 2007). While this area does not contain suitable nesting habitat for this species, suitable foraging habitat is present. Human activity should not disrupt nesting activity. Construction of new towers and grading of new or existing access roads will cause habitat loss and degradation within the Project area. Localized construction presence may dissuade golden eagles from foraging within areas near active construction. There are no existing transmission line corridors along this segment, and construction of a new line would create risks to golden eagles of electrocution or collision as they forage. However, the new transmission line would be constructed to meet the latest avian protection standards to minimize the risk of direct effects to this species (APLIC 2006).

General practices that would reduce short-term or long-term effects to bald eagle include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to bald eagle include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-17 (Protect the bald eagle and golden eagle).

Avian Risk

Segment C poses mostly a low risk to avian species, according to the Avian Risk Assessment, with only one mile of the segment presenting a moderate risk. This segment is an entirely new transmission corridor; furthermore, various parts of this segment are within 0.5 mile of wetland data, have average wind speeds greater than 16.8 mph, and/or are near a convergence or divergence of existing nearby lines. New transmission corridors pose collision risks to birds because they are not expecting the lines to be there. Also, higher wind speeds are believed to result in lower numbers of avian migrants, wetlands are routinely used as takeoff and landing points for birds, and converging and diverging transmission lines can increase collision risk by causing birds to perform multiple evasive maneuvers. Potential effects as a result of these factors include collision and electrocution of birds at transmission lines. GP-8 and GP-11 would protect local and migratory bird species that may occur and reduce short-term and long-term effects to migratory bird species in the BRRTP area, respectively, while applicable mitigation measures include BIO-3 (Incorporate riparian area avoidance and permit measures) and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Other Wildlife

Common species which may occur along Segment C include species such as side-blotched lizard, western whiptail, white-tailed antelope ground squirrel, coyote, desert cottontail (*Sylvilagus audubonii*), one or more kangaroo rat species, and various unknown migratory bird species. Construction on Segment C may result in injury, mortality, or displacement of any of these species due to crushing or collision during grading of access roads or tower sites; loss of habitat or reduction in food availability during construction; and disturbance from construction noise and vibration leading to dispersal.

Vegetation Communities

Sections of Segment C cross BLM lands; surveys within this area consisted of mapping vegetation communities. The BLM lands crossed by the proposed alternative transmission line routes are located on the lower east-facing slopes of the easternmost Transverse Ranges, the northernmost slopes of the San Gabriel Mountains and within the western edge of the Mojave Desert. The vegetation types in this area are characteristic of dry interior desert-influenced mountain ranges and of the Mojave Desert. Holland vegetation types were assigned during the mapping exercise, so that the vegetation mapping would be consistent with mapping of the ANF lands.

The vegetation types mapped within BLM lands include the following four natural upland vegetation types:

- Mojave Creosote Bush Scrub
- Rabbitbrush Scrub
- Mojave Wash Scrub
- Joshua Tree Woodland

No special status plant species are known to occur within Segment C. Surveys were not conducted along the 22 miles of private property.

The 25 special status plant species are likely to occur within Segment C include:

- Nevin's barberry (*Berberis nevinii*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Alkali mariposa lily (*Calochortus striatus*)
- Peirson's morning glory (*Calystegia peirsonii*)

- White pygmy poppy (*Canbya candida*)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)
- White-bracted spineflower (*Chorizanthe xanti* var. *leucotheca*)
- Red Rock tarplant (*Deinandra arida*)
- Mojave tarplant (*Deinandra mohavensis*)
- Slender-horned spineflower (*Dodecahema leptoceras*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Barstow woolly sunflower (*Eriophyllum mohavense*)
- Red Rock poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Pale-yellow layia (*Layia heterotricha*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Creamy blazing star (*Mentzelia tridentata*)
- Short-joint beavertail (*Opuntia basilaris* var. *brachyclada*)
- Charlotte's phacelia (*Phacelia nashiana*)
- White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)
- Chaparral ragwort (*Senecio aphanactis*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- San Bernardino aster (*Symphyotrichum defoliatum*)
- Golden violet (*Viola aurea*)

The 12 special-status plants that could possibly occur within Segment C include:

- California androsace (*Androsace elongata* ssp. *acuta*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Mojave Indian paintbrush (*Castilleja plagiotoma*)
- Desert cymopterus (*Cymopterus deserticola*)
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)
- Southern California black walnut (*Juglans californica*)
- Ocellated lily (*Lilium humboldtii* ssp. *ocellatum*)
- Sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum*)
- Peirson's lupine (*Lupinus peirsonii*)
- Ojai navarretia (*Navarretia ojaiensis*)
- Coulter's matilija poppy (*Romneya coulteri*)
- Lemmon's syntrichopappus (*Syntrichopappus lemmonii*)

The four special-status plants that are unlikely to occur within Segment C include:

- Bear Valley woollypod (*Astragalus lentiginosus* var. *sierra*)
- Slender mariposa lily (*Calochortus clavatus* var. *gracilis*)
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- California satintail (*Imperata brevifolia*)

Direct impacts to special-status plant species may occur in a variety of ways, including the direct removal of plants during the course of construction. Clearing and grading associated with the placement of towers or the grading of access or spur roads may also result in the alteration of soil conditions, including the loss of native seed banks and changes to the topography and drainage of a site such that the capability of the habitat to support special-status species is impaired. Indirect impacts include the creation of conditions that are favorable for the invasion of weedy exotic species that prevent the establishment of desirable vegetation and may adversely affect wildlife. Dust from road travel, grading, or other construction activities may also reduce photosynthetic capacity in plants over time or inhibit reproduction by physically coating reproductive structures or excluding insect pollinators. Soil disturbance may also result in the spread of invasive plant species. Trampling due to foot or vehicular traffic could result in soil compaction if it occurs repeatedly within any specific area; soil compaction may in turn lead to reduced water absorption and increased runoff, potentially contributing to an increase in non-native plant species, which could be more tolerant of these conditions.

The potential introduction or spread of noxious and invasive weeds would occur primarily during construction activities, but would also continue to occur during operation and maintenance phases of the Project. The introduction of noxious and invasive weeds would be related to ground disturbance from clearing and grading, expansion of access roads, construction of spur roads, and road maintenance; the use of vehicles, construction equipment, or earth materials contaminated with non-native plant seed; use of straw bales or wattles that contain seeds of non-native plant species; and enhanced public access to the Project corridor during and after construction. Additionally, weed seeds are often spread on equipment or clothing by construction or maintenance personnel. This would provide many avenues for new propagules (any part of a plant that may generate a new individual plant) to be carried into areas that previously were isolated from sources of noxious weed seeds. Direct impacts associated with the introduction of noxious weeds could occur when noxious weeds become established in an area. These invasive plant species can cause a permanent or long-lasting change to the environment by increasing vegetative cover, creating a dense layer that prevents native vegetation from germinating, altering the edaphic and hydrological conditions through nitrogen fixation (as in Spanish broom), or may drain the water table (as in giant reed). Noxious weeds can create such an unfavorable environment for wildlife that associate, mutualistic species necessary for native plant life cycles, such as seed dispersers, fossorial mammals, or pollinators, are lost from the area. Indirect impacts attributed to the colonization of noxious weeds could include a gradual decrease in natural biodiversity, as noxious weed infestations may extirpate native plant populations.

Operational impacts would also include trampling or crushing due to public use of new or improved spur roads and access roads, increased erosion, and the spread and colonization of noxious weeds. Other operational impacts include removal and trimming of vegetation during maintenance activities. Restoration activities may inadvertently lead to negative effects on special-status plant species, should they be present during construction. For instance, seed collection from native plants may result in the unintentional trampling of smaller listed species should they be present in the area, or in the removal of seeds from listed species. Effective preconstruction flagging of these species would assist in reducing the likelihood of incidental effects during seed collection or even weed removal. Weed removal may also lead to species that are not non-native being unintentionally treated or removed.

General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-24, GP-25, GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat).

TABLE 23. MITIGATION MEASURES APPLICABLE TO SEGMENT C

Wildlife Species	Mitigation Measures		Vegetation Community/Plant Species	Mitigation Measures
American Badger	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20		Mojave Creosote Bush Scrub	AIR-2a, BIO-1, BIO-2, BIO-5, BIO-14

Wildlife Species	Mitigation Measures		Vegetation Community/Plant Species	Mitigation Measures
Desert Tortoise	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-23		Rabbitbrush Scrub	AIR-2a. BIO-1, BIO-2, BIO-13
Coast (San Diego) Horned Lizard	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-22		Mojave Wash Scrub	AIR-2a, BIO-1, BIO-2, BIO-13
Kit Fox	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20		Joshua Tree Woodland	AIR-2a, BIO-1, BIO-2, BIO-13
Burrowing Owl	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-8, BIO-16			
Western Mastiff Bat	HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-21			
Mohave Ground Squirrel, Southern Grasshopper Mouse, and Tehachapi Pocket Mouse	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20			
Coastal Rosy Boa	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-22			
Golden Eagle	HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-7, BIO-11, BIO-17			
Raptors and Other Migratory Birds	HYD-1, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-8, BIO-11			
General Wildlife	BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-8, BIO-11			

TABLE 24. BIOLOGICAL RESOURCES FOUND WITHIN SEGMENT C AND POTENTIAL ACREAGE OF DISTURBANCE

	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Avian Assessment Impacts				
Low	126.7	126.7	39.7	59.5
Joshua Trees Present				
Yes	19.9	19.9	6.1	9.6
Vegetation				
Joshua Tree Woodland	16.4	16.4	4.5	8.4
Mojave Creosote Bush Scrub	121.8	121.8	32.9	62.0
Mojave Wash Scrub	0.0	0.0	0.0	0.0
Rabbitbrush Scrub	2.9	2.9	0.9	1.8

7.1.4 Segment D

Segment D joins Segment C and is situated largely within a mix of chaparral communities and non-native grassland in the northern section, off ANF lands. The northern end of Segment D contains pockets of chaparral, Mojave creosote bush scrub, Mojave mixed-woody scrub, desert saltbush scrub, pockets of Joshua Tree and rabbitbrush scrub. The remaining lengths have been converted to non-native grassland, or were located outside the boundaries of the Mojave Desert. Evidence of grazing was observed from MP

5.1 to 6.2. Other disturbances included several roads and an aqueduct with its associated access roads. In Segment D on the ANF the vegetation types are predominantly scrub oak and mixed chaparral with pockets of buckwheat scrub in the northern section with the middle and southern sections being predominantly mixed chaparral, chamise chaparral and Riversidian sage scrub. Multiple washes and riparian areas cross the entire corridor at various points. Disturbance types in the Segment D portions on the ANF include off-highway vehicle (OHV) use, weed invasion, pipeline ROWs and refuse dumping.

Potential coastal California gnatcatcher habitat was observed along Segment D (POWER 2009a). However due to the existence of small isolated patches of coastal scrub habitat and the high elevation of most of the Santa Clara Ranger District, the potentially suitable habitat in these areas is not expected to support California gnatcatchers.

Three sites surveyed for the arroyo toad are along Segment D (Site Assessment #s 1, 2 and 18), and one site is also near Segment G (Site Assessment #14). Site Assessment #18 is northwest of Castaic Lake on the west fork of Liebre Creek. No arroyo toad life stages were found in 2008.

Wildlife

American Badger

Under Segment D, there may be direct or indirect construction impacts to American badger, expected to be likely to occur based on reported occurrences (CDFG 2010). Tower construction and grading of new or existing access roads will result in habitat and vegetation loss, which may result in a temporary increase in food availability due to reduced cover for rodents and other species that badgers prey upon. The northern portion of this segment, located in the Antelope Valley, has no existing parallel transmission lines, though the Los Angeles Aqueduct runs parallel to the segment for most of its northern length, both above and below ground depending on the specific location. The southern portion of this segment, located in the ANF, runs parallel to up to five existing transmission lines at a time. This will result in varying degrees of habitat loss depending on where construction is occurring within the segment. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-20, will identify any possible active or inactive American badger burrows, but some burrows may still go unnoticed and may therefore be crushed or damaged by vehicles, heavy equipment, or trampling. This may in turn result in the injury or mortality of one or more badgers. Badgers may be displaced by construction activity, including noise and vibrations, but because their home ranges can be up to 400 acres for females and up to 600 acres for males, and because some of the nearby occurrences are more than two miles away, it is likely that any displaced individuals would be able to expand outside of the construction zone without a significant impact on their well-being.

General practices that would reduce short-term or long-term effects to American badger include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to American badger include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

California Condor

Under Segment D, there would be direct or indirect impacts to California condor associated with implementation of the proposed action. This species is expected to be present based on GPS data supplied by USFWS (USFWS 2008b, USFWS 2009d). It is estimated that the maximum permanent disturbance to California condor occupied habitat would be 1.0 acre, while the maximum temporary disturbance would be 3.2 acres (see Appendix C). Tower construction and grading of new or existing access roads will result in habitat and vegetation loss. It is not expected that the amount of vegetation and habitat loss that will occur on this segment will have a significant effect on this species, as immatures have been measured foraging over 140 miles and nesting pairs typically 31 – 44 miles in a single day (USFWS 1996b) and can likely adapt to the relatively minor change. Construction may result in trash or microtrash being left behind by the crews, even with the implementation of mitigation measure BIO-18. Any leftover trash or microtrash has the possibility to be ingested by condors, which in turn would be regurgitated for chicks to feed on, which can lead to mortality of the chicks (USFS 2008). This is a short-term impact that would be addressed by the implementation of BIO-18 and the creation of a Proper Disposal of Construction Waste Plan for the Project. As stated in mitigation measure BIO-6, road kill within the construction area would be reported within 24 hours to the USFS or BLM if on NFS or BLM land, respectively, or to the local animal control center if on non-federal lands. The construction of the towers and presence of new transmission lines may stress condors or lead to a collision depending on eventual placement and proximity to existing lines, which is anticipated to be resolved through mitigation measure BIO-18. If condors are present in the construction area, then all construction will stop until the condor leaves the area; the biological monitor will document the occurrence and report it to USFWS (and USFS if applicable).

General practices that would reduce short-term or long-term effects to California condor include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to California condor include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-18 (Protect California condor). Formal consultation is being conducted with the USFWS to determine if any additional protection measures other than those mentioned above are necessary to protect California condors. In addition, any reasonable and prudent measures requested by the USFWS to protect the California condor will be implemented.

Loggerhead Shrike

This species, while not included in the direct construction corridor impacts, has nevertheless been observed within Segment D. Under Segment D, there would be direct or indirect effects to loggerhead shrike, expected to be present due to appropriate habitat and a sighting during a non-BRRTP survey in 2009 (POWER 2009d). Tower construction and grading of new or existing access roads would result in habitat and vegetation loss. This would cause habitat degradation which may make the area less appealing to loggerhead shrike individuals. It is expected that preconstruction surveys and/or biological monitoring will locate any nests within shrubs or trees in the area, although if any nests are not located, this could result in injury or mortality of individuals. Construction noise and human presence may cause birds to disperse from the area, potentially abandoning a nest if any birds are nesting nearby during construction.

General practices that would reduce short-term or long-term effects to loggerhead shrike include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to loggerhead shrike include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Coast (San Diego) Horned Lizard

This species, while not considered in the direct construction corridor impacts, is nevertheless expected to be present in the general area based on recorded sightings (CDFG 2010) and on independent personal observations by POWER and the USFS (N. Sill personal communication 2011). Under Segment D, there would be direct or indirect effects to coast horned lizard which is expected to be present due to numerous sightings within 1.5 miles of the segment, including two of which are within 0.25 mile of the segment's centerline (CDFG 2010). Tower construction and grading of new or existing access roads would result in habitat and vegetation loss, and may result in direct injury or mortality of individuals. Removal of chaparral for the grading of access roads or tower sites would reduce or degrade suitable habitat for this species. Additionally, any coast horned lizards that go undetected by preconstruction surveys—in compliance with mitigation measure BIO-22—and are present under vegetation, on roads, in streambed crossings, or in burrows, may be crushed by foot traffic, vehicles, or heavy equipment. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any coast horned lizards which may fall into them. It is expected that the risk of falling into an open hole would be greater overnight, as the construction noise and vibrations would be more likely to keep any coast horned lizards from approaching too close to the active site during the day. The construction work may also lead to dispersal of individuals from the area, which could lead to reduced fitness of those individuals if the adjacent habitat is less optimal. This dispersal could also lead to an increased risk of predation or competition if any animals are forced to relocate to unfamiliar territory.

General practices that would reduce short-term or long-term effects to coast horned lizard include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to coast horned lizard include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Least Bell's Vireo

This species, while not considered in the direct construction corridor impacts, is nevertheless expected to be present nearby. Under Segment D there would be direct or indirect effects to least Bell's vireo, which are expected to be present due to sightings approximately 0.5 mile away in a riparian corridor near Castaic Lagoon on ten separate occasions, the highest of which consisted of 15 birds. Tower construction and grading of new or existing access roads may result in habitat loss if there are any other riparian vegetation areas directly under the segment that could be used by this species. If construction is occurring during nesting season, preconstruction/protocol surveys would attempt to locate any nests, as dictated by mitigation measure BIO-14. However, if any active nests are present within the construction corridor and go unnoticed, they may be at risk for destruction, which would possibly result in injury or mortality. The location of the aforementioned population is within 0.5 mile of the proposed corridor, but the transmission line would be approximately 375 feet higher in elevation—and set back from the top of a hill—than the patch of suitable habitat where the vireos were previously identified, which is at the bottom of a canyon. It is not expected that any vegetation removal in this area would be required or that any vegetation would be directly impacted, as the corridor is not close enough and the paved road would likely be maintained by the management of the Castaic Lake State Recreation Area, of which this road is a part.

While individual least Bell's vireos may be affected by the noise of passing vehicles if Project equipment enters and exits the ROW via the paved road that passes by the vireo site, further effects to least Bell's vireos or their habitat are not expected in this area due to its topographical features. Because the paved road that passes adjacent to the vireo sighting location is a public road within the Castaic Lake State Recreation Area, birds in the area likely have become acclimated to periodic disturbances from vehicular traffic on this roadway. Should construction vehicles enter and exit the ROW in this area from a different road, of which there are several in the area that could be used if necessary, direct impacts from construction to any vireos that may be present are expected to be negligible. Although there is little suitable habitat to support this species along the rest of this proposed corridor, impacts to riparian habitat occupied during the breeding season by the endangered least Bell's vireo would constitute a take under ESA and CESA. Impacts to this species would require formal consultations with the federal and State resource agencies. Impacts to this and other riparian bird species are avoidable by limiting construction within riparian habitats to periods outside the breeding season for riparian-dependent species.

General practices that would reduce short-term or long-term effects to least Bell's vireo and to riparian habitat include GP-3, GP-4, GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to least Bell's vireo include HYD-1 (Use of existing water crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat).

Coastal California Gnatcatcher

Under Segment D, there may be direct or indirect construction impacts to coastal California gnatcatcher, expected to be present due to several individuals identified on both sides of Castaic Lake during 2010 and 2011 BRRTP bird use count surveys conducted by POWER, one recorded sighting within 1.3 miles of the proposed ROW (CDFG 2011), and suitable coastal California gnatcatcher habitat identified during 2008 habitat surveys (POWER 2010b). Construction-related impacts could include increased noise, traffic, or other human activities that would potentially disturb individual coastal California gnatcatchers that are foraging or passing through the Project area. These impacts would be localized and temporary. Because of the location of habitat patches identified in 2008 and those where individuals were located in 2010 and 2011, it is possible that some of these could be destroyed or degraded by construction, as some are directly within the corridor or nearby. No designated critical habitat for this species is located along the proposed Segment D corridor. Preconstruction surveys would be conducted to determine usage of these areas by coastal California gnatcatchers, and appropriate temporal, spatial, and/or noise limitations would be imposed on construction in accordance with mitigation measure BIO-15. Potential indirect effects to coastal California gnatcatchers from Project construction could include increased vulnerability to predation for individuals that move outside of their specific habitat patches during construction, possible inability to effectively forage due to construction-related stress or unfamiliarity with a new area, and habitat degradation resulting from the spread and establishment of non-native species or the deposition of dust onto surrounding vegetation as a result of vehicles or reestablishment of access roads if necessary. Human presence following construction is not expected to noticeably increase, as construction in these areas would all be conducted on existing transmission line towers.

General practices that would reduce short-term or long-term effects to coastal California gnatcatcher include GP-8, GP-24, GP-33, GP-34, GP-35, GP-41, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term and long-term effects to coastal California gnatcatcher include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-15 (Protect coastal California gnatcatcher and its habitat).

Western Spadefoot Toad

Under Segment D, there will be direct or indirect effects to western spadefoot toad, expected to be present on this segment due to the observation of tadpoles within one mile of the proposed ROW (CDFG 2010). There is also suitable grassland habitat in many locations along this segment, and several cattle ponds in the canyon just west of the proposed corridor, south of Templin Highway, that may be able to support this species. Tower construction and grading of new or existing access roads would destroy or degrade grassland habitat, while excessive disturbance in streambed crossings may degrade wash habitat or possibly alter hydrology. The aforementioned cattle ponds are not expected to be affected by construction unless runoff from the work area comes down the canyon. Direct injury or mortality from crushing by equipment or vehicles may occur, while passage through any wet streambeds may drain water away from tadpole sites, should they be present. Because anurans are known to be most active at night, any night construction may also result in crushing of any animals that travel across the road.

General practices that would reduce short-term and long-term effects to western spadefoot toad include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to western spadefoot toad include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program).

Burrowing Owl

Under Segment D, there would be direct or indirect construction impacts to burrowing owl, expected to be likely to occur based on availability of suitable habitat and three reported sightings within three miles of the proposed ROW (CDFG 2010). Tower construction and grading of new or existing access roads will result in habitat fragmentation and vegetation loss, which will result in a degradation of the overall habitat quality, making it less appealing and less suitable for burrowing owls. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-16, will identify any possible active or inactive burrowing owl burrows, but some burrows may still go unnoticed or be incorrectly identified as rodent-only burrows and may therefore be crushed or damaged by vehicles, heavy equipment, or trampling. This may result in the injury or mortality of one or more owls if they are present. Where construction occurs near residential areas around Neenach or San Francisquito Canyon, it may draw the attention of scavengers or domesticated animals, resulting in an increased risk of predation. Because burrowing owls are most active at dusk and dawn (Zarn 1974) and have a reduced capability to forage at night (Voous 1988), the presence of humans, vehicles, and heavy equipment may disrupt any foraging or nesting practices during construction hours.

General practices that would reduce short-term or long-term effects to burrowing owl include GP-8, GP-23, GP-24, GP-25, GP-34, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to burrowing owl include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-16 (Protect burrowing owl).

Swainson's Hawk, Peregrine Falcon, Bald Eagle, and Golden Eagle

Under Segment D, there may be direct or indirect effects to Swainson's hawk, peregrine falcon, bald eagle, or golden eagle. Swainson's hawk is expected to have a possibility to occur based on availability of suitable grassland and shrub habitat in the segment's northern end. Peregrine falcon and bald eagle are both expected to have possibilities of occurring on this segment due to the abundant open water around Quail Lake, Pyramid Lake, Castaic Lake, and Castaic Lagoon. There are also nesting opportunities for falcons with the buildings and structures around the Castaic Lake/Lagoon region. Golden eagle is expected to be present based on multiple recorded sightings within the AltaPacific Wind Energy Project area (Kern County 2010a) and PdV Wind Energy Project area (Kern County 2007). Construction of new towers and grading of new or existing access roads would result in vegetation and habitat loss to these species. Direct injury or mortality to Swainson's hawk, peregrine falcon, and bald eagle from construction is not expected based on the lack of recorded sightings of these species. Should any of them nest near the proposed ROW they may be displaced by construction disturbance depending on the amount of ambient disturbance in the area, which is greater around Neenach and Castaic Lake/Lagoon. If this is the case, adults and/or their young would likely need to relocate, which could possibly result in indirect injury or mortality as they move to inhabit new locations. Injury or mortality to golden eagles could occur because of their known proximity to the Project area and the availability of suitable foraging habitat within the northern portion of Segment D north of the ANF. Because there are no existing transmission lines within the proposed corridor on the northern section of Segment D, power line design could result in injury or mortality to raptors that are flying through the area or even perching on the towers, and appropriate tower design and protective measures will need to be enforced to prevent this. Birds, particularly raptors, are also known to perch, roost, or even nest on transmission structures, and may collide with power lines upon landing in or leaving a water body (APLIC 2006).

General practices that would reduce short-term or long-term effects to Swainson's hawk, peregrine falcon, bald eagle, and golden eagle include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Swainson's hawk and peregrine falcon, and golden eagle include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-17 (Protect the bald eagle and golden eagle).

Pallid Bat, Townsend's Big-eared Bat, Western Mastiff Bat, and Western Red Bat

Under Segment D, there may be direct or indirect construction impacts to pallid bat, Townsend's big-eared bat, western mastiff bat, and western red bat. Pallid bat and Townsend's big-eared bat are expected to be likely to occur on this segment based on availability of foraging habitat in the grasslands of the northern portion of the segment and roosting habitat around Castaic Power Plant and upstream in Castaic Creek, where there are numerous rocky outcrops in high canyon walls. Western mastiff bat is expected to be likely to occur on this segment based on availability of shrubby foraging habitat in the northern portion and five existing transmission lines for roosting habitat. Western red bat is expected to be likely to occur based on availability of riparian canyon habitat through Castaic Creek in Cienaga Canyon and the possibility of additional suitable habitat throughout the mountains east of the proposed ROW. Tower construction and grading of new or existing access roads would result in loss of foraging habitat and degradation in habitat quality, although tower construction may provide additional roosting habitat for the western mastiff bat. Pallid bats and Townsend's big-eared bats in particular are sensitive to human disturbance, and construction during summer months, when bat activity is higher, may cause a greater degree of disturbance to the bats, potentially leading to their abandonment of the area (Vaughan and O'Shea 1976, Piaggio 2005). This can indirectly lead to injury or mortality if it results in encounters with equipment or in decreased fitness at a new location due to unfamiliarity. The bats would likely return to the same roost the following season if it were still available (B. Doering personal communication 2011). Mating for pallid bats occurs from October to February, birth from April to July, and final weaning in August; mating in Townsend's big-eared bats generally occurs between October and February, with birth between May and July; mating in western mastiff bats typically begins in early March with birth ending in September; and mating in western red bats occurs in late summer or early fall with birth the following summer (Reid 2006). Construction during certain time periods of these windows may be more disturbing to some bat species than others, if they are present.

Should a bat roost be disturbed by construction, complete abandonment of the roost may result, particularly for more sensitive species like pallid bats or Townsend's big-eared bats. This may lead to complete nesting failure for the season, resulting in a loss of that year's new bat births. Because bats are mainly nocturnal, any night construction would disturb them, disrupting foraging and potentially leading to injuries. Disruption of hibernation is unlikely given the generally warm winters in Southern California. McNab (1974) suggests that only bats that are both small and do not cluster in groups can hibernate when the environmental temperature is above 14°C (57.2°F). Pallid bats may roost alone or in groups from two to several hundred and, although they will hibernate in cold parts of their range, they overwinter in coastal California (Rambaldini 2005). They have been reported to remain active at temperatures between -5°C (23°F) and 10°C (50°F). Townsend's big-eared bats may hibernate in groups of single individuals to several hundred; in some areas, mainly in the eastern U.S., they may hibernate in groups up to several thousand (Piaggio 2005). Western mastiff bats cluster in groups of 30 to several hundred and do not undergo long periods of hibernation, instead remaining periodically active throughout the winter (Siders 2005). Although winter behavior of western red bats is not well understood, it is possible that they also do not hibernate for long periods, as this species has been reported to be found foraging during the winter on warm days, even in northern California (Bolster 2005). It is likely that bats in the Project area would periodically enter states of torpor but would generally remain relatively active compared to bats in colder parts of the country, where hibernation is more feasible.

General practices that would reduce short-term or long-term effects to special-status bat species include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short-term or long-term effects to special-status bat species include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-21 (Protect sensitive bat species).

Southern Grasshopper Mouse and San Diego Black-tailed jackrabbit

Under Segment D, there may be direct or indirect construction impacts to southern grasshopper mouse and San Diego black-tailed jackrabbit. Southern grasshopper mouse is expected to have a possibility of occurring based on availability of suitable habitat and location of the proposed ROW relative to the species' ranges. In addition, San Diego black-tailed jackrabbit is expected to be present due to a sighting by POWER in summer 2009 within 0.5 mile of the proposed ROW's northern section. Tower construction and grading of new or existing access roads will result in habitat loss, resulting in a decrease in food availability for these species and possibly an increase in predation risk due to reduced vegetation cover. Preconstruction surveys will identify any possible burrows, but undiscovered burrows may be crushed during construction, resulting in possible injury or death to one or more individuals and a reduction in suitable hiding places. Grasshopper mice may be scared out of their burrows by construction noise or vibration, but because this species may maintain multiple home and accessory burrows (Reid 2006), it is not expected that this would result in the complete displacement of any individuals unless they happen to be currently residing only in the ROW. Displacement of this species from burrows may lead to injury or mortality due to exposure to predation from raptors or other predators. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any small mammals in the area, which may fall into them.

The jackrabbit that was identified by POWER was located in a reasonably disturbed residential area within Neenach, and additional disturbance may be less of an impact than it would be for other species or in more pristine habitat. Because black-tailed jackrabbits are usually nocturnal, construction at night would result in foraging disturbance and possibly injury or mortality from equipment (Reid 2006). During the day, they sleep in depressions under bushes, and if for any reason one should be caught suddenly and unexpectedly by construction, injury or mortality could again occur (Reid 2006). Although birthing occurs year-round, young are able to run within a couple hours of birth and would be less likely to be harmed or killed by construction than species whose young can take several weeks to become independently mobile (Reid 2006). However, dispersing young during the day could leave them open to increased predation risk.

General practices that would reduce short-term or long-term effects to southern grasshopper mouse and San Diego black-tailed jackrabbit include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to southern grasshopper mouse and San Diego black-tailed jackrabbit include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Desert Kit Fox

Under Segment D, there would be direct or indirect construction impacts to desert kit fox, expected to be likely to occur due to availability of suitable habitat and numerous signs of potential prey identified by POWER during 2008 desert habitat surveys (POWER 2009c). Tower construction and grading of new or existing access roads will result in habitat loss, which may result in a temporary increase in food availability by providing less cover for wildlife that the desert kit fox preys upon. Habitat degradation may also occur as a secondary effect of adjacent habitat loss or general construction access. This could result from the spread of non-native vegetation in the construction or access area or from excessive dust from construction in the desert area, necessitating the implementation of non-native weed prevention and dust control measures. Habitat degradation may also occur as a secondary effect of adjacent habitat loss or general construction access. This could result from the spread of non-native vegetation in the construction or access area or from excessive dust from construction in the desert area, necessitating the implementation of non-native weed prevention and dust control measures. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-20, will identify any possible active or inactive desert kit fox burrows, but any unnoticed burrows may be crushed during construction, possibly resulting in injury of mortality of one or more kit foxes that may be present. Nearby kit foxes may be scared away from the area or to other burrows by construction noise or vibrations, but as human presence will only be temporary, it is expected that this would result in a short-term effect.

General practices that would reduce short-term or long-term effects to desert kit fox include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to desert kit fox include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Desert Tortoise

Under Segment D, there may be direct or indirect construction impacts to desert tortoise, expected to have a possibility to occur based on availability of suitable habitat within the northernmost six miles of this segment. Project construction could result in direct adverse effects to desert tortoise. Injury or mortality could occur to tortoises underground in undetected burrows that are driven over by construction vehicles or equipment, or to tortoises that are under vegetation and are not detected during construction or pre-construction surveys. Permanent habitat loss would occur as a result of the construction of new transmission towers and new access roads, resulting in decreased forage and vegetative cover for tortoises in the area. Because tortoises may use desert washes as habitat, excessive disturbance to these areas as a result of construction would degrade and possibly reduce habitat further. During construction, increased predation could occur from ravens and coyotes, which are attracted to human activity to scavenge for food. Tortoises that wander too close to construction would require manual relocation by an authorized biologist and would likely undergo stress during the movement process and possibly afterward, until they are able to find suitable shelter again. Since vegetation re-growth is a slow process in this arid climate, creosote bushes large enough to provide good cover would take a decade to revegetate the area.

Habitat loss and reduced vegetation may subject desert tortoises to increased predation from aerial predators by decreasing the amount of cover available to hide under. Additionally, construction of a new transmission line would increase nesting and perching opportunities for raptors, increasing the likelihood of predation on desert tortoises. After construction is completed, injury or mortality from vehicle collisions may occur during maintenance activities and security patrols.

General practices that would reduce short-term or long-term effects to desert tortoise include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to desert tortoise include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-23 (Protect desert tortoise and habitat loss).

Coastal Rosy Boa

Under Segment D, there may be direct or indirect effects to coastal rosy boa, expected to be likely to occur based on availability of suitable terrestrial and aquatic habitat. Construction of new towers and access roads will result in vegetation and habitat loss, and any movement of rocky areas for construction purposes may destroy additional habitat and refuges. Moving rocks may also result in injury or mortality if any rosy boas are present in between the rocks or on the ground adjacent to them. Excessive disturbance to washes may have additional impacts to habitat, as coastal rosy boas are attracted to permanent and intermittent streams (Stebbins 2003). Scaring away rodents or herpetofauna could also cause reductions in food supply for any boas that may be in or near the ROW, while scaring boas into the open may cause increases in predation. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any snakes in the area that may get trapped in them. Finally, individuals may be unintentionally run over by construction traffic should they be basking on the ground and undetected.

General practices that would reduce short-term or long-term effects to coastal rosy boa include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to coastal rosy boa include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4

(Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Mule Deer

For a discussion of potential impacts to the mule deer as a result of construction on Segment D, please refer to the Management Indicator Species report.

Mountain Lion

For a discussion of potential impacts to the mountain lion as a result of construction on Segment D, please refer to the Management Indicator Species report.

Song Sparrow

For a discussion of potential impacts to the song sparrow as a result of construction on Segment D, please refer to the Management Indicator Species report.

Avian Risk

Segment D presents a low, moderate, or high risk to avian species depending on different locations within the segment, according to the Avian Risk Assessment. All risk factors except one—“line crosses a reservoir or lake”—were present in various locations throughout this segment. These include a new transmission corridor; the line crossing a recorded wetland; a wetland being within 0.5 mile of the transmission line; a reservoir or lake within 0.5 mile of the transmission line; the line crossing through two separate habitat usage types; the line crossing a valley or canyon perpendicularly; the line crossing perpendicular to prevailing winds; the line crossing through an area with wind speeds on average greater than 16.8 mph; a water body with established emergent vegetation being within 0.5 mile of the transmission line; a line convergence or divergence within 0.5 mile of the transmission line; a 40+% slope within 0.5 mile of the transmission line; a nearby ridgeline; a ridge crossing perpendicular to the line; and a valley nearby to the line. New transmission corridors pose collision risks to birds because they are not expecting the lines to be present. Wetlands, reservoirs, and lakes tend to create congregations of birds that can collide with lines during landing or takeoff, while lines that cross through different habitat types (such as agriculture and wetland) pose risks to birds which may be crossing between habitats. Lines crossing perpendicular to valleys or canyons pose risks to avian species because birds often fly through valley or canyons. Also, winds that are prevailingly perpendicular to transmission lines can blow birds into the lines, while higher wind speeds are believed to result in lower numbers of avian migrants. Converging and diverging transmission lines can increase collision risk by causing birds to perform multiple evasive maneuvers. Lines placed near steep slopes are risky because birds such as California condors and peregrine falcons nest on slopes and cliff faces, which increases the risk of collision when coming or going from the nest (although no condor nests have been documented near this segment). Crossing near or perpendicular to ridgelines is a risk factor because raptors use thermal updrafts to soar near ridges, and may collide with transmission lines if they are flying too close.

Potential effects as a result of these factors include collision and electrocution of birds at transmission lines. GP-8 and GP-11 would protect local and migratory bird species that may occur and reduce short-term and long-term effects to migratory bird species in the BRRTP area, respectively, while applicable mitigation measures include BIO-3 (Incorporate riparian area avoidance and permit measures) and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Other Wildlife

Common species which may occur along Segment D include species such as side-blotched lizard, western whiptail, white-tailed antelope squirrel, coyote, desert cottontail, kangaroo rat, Pacific tree frog, California tree frog, western toad, and various unknown migratory bird species. Construction on Segment D may result in injury, mortality, or displacement of any of these species due to crushing or collision during grading of access roads or tower sites; loss of habitat or reduction in food availability during construction; and disturbance from construction noise and vibration leading to dispersal.

Vegetation Communities

The vegetation types of the proposed Segment D include:

- Scrub Oak Chaparral
- Southern Mixed Chaparral
- Riversidian Sage Scrub
- Chamise Chaparral
- California Annual Grassland
- Mojave Creosote Bush Scrub
- Joshua Tree Woodland
- Rabbitbrush Scrub
- Agricultural Land
- Disturbed/Developed
- Southern Coast Live Oak Riparian Forest
- Southern Cottonwood Willow Riparian Forest
- Southern Sycamore Alder Riparian Woodland
- Southern Willow Scrub
- Valley Oak Woodland

Invasive weeds found on the Segment D access roads include:

- Blessed thistle (*Cnicus benedictus*)
- Broadleaved pepperweed (*Lepidium latifolium*)
- Cheatgrass* (*Bromus Tectorum*)
- Crimson fountaingrass (*Pennisetum setaceum*)
- Giant reed (*Arundo donax*)
- Prickly Russian thistle (*Salsola tragus*)
- Red brome* (*Bromus madritensis*)
- Saltcedar (*Tamarix ramosissima*)
- Shortpod mustard* (*Hirschfeldia incana*)
- Sweet fennel (*Foeniculum vulgare*)
- Tall tumblemustard* (*Sisymbrium altissimum*)
- Tocalote (*Centaurea melitensis*)
- Tree tobacco (*Nicotiana glauca*)
- Yellow star-thistle (*Centaurea solstitialis*)

* Indicates species that were too widespread and numerous to map.

The two special-status plants found within the proposed Segment D include:

- Slender mariposa lily (*Calochortus clavatus* var. *gracilis)*
- Short-joint beavertail (*Opuntia basilaris* var. *brachyclada*)

Prior to field surveys, 56 special-status plant species were determined to have potential to occur within the proposed Segment D, including 39 species with the possibility to occur and 17 species likely to occur. Suitable habitat for these species occurs within Riversidian Sage Scrub of Segment D. See Table 7 and species accounts for more information. All of these were searched for during 2008 and 2009 protocol-level surveys on ANF lands at a time of year when they are identifiable in the field. Individuals of short-joint beavertail and slender mariposa lily were the only special-status plants found.

The 17 special-status plants that are likely to occur within Segment D include:

- Nevin's barberry (*Berberis nevinii*)
- Round-leaved filaree (*California macrophylla*)
- Plummer's mariposa lily (*Calochortus plummerae)*
- Peirson's morning-glory (*Calystegia peirsonii)*
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)
- Slender-horned spineflower (*Dodecahema leptoceras*)
- San Gabriel bedstraw (*Galium grande*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Ross's pitcher sage (*Lepechinia rossii*)
- Davidson's bush-ma*llow (Malacothamnus davidsonii*)
- Ojai navarretia (*Navarretia ojaiensis*)
- Chaparral ragwort (*Senecio aphanactis*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- San Bernardino aster (*Symphyotrichum defoliatum*)
- Greata's aster (*Symphyotrichum greatae*)
- Golden violet (*Viola aurea*)

The 35 special-status plants that have the potential to occur within Segment D include:

- California androsace (*Androsace elongata* ssp. *acuta*)
- Braunton's milk-vetch (*Astragalus brauntonii*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus)*
- Palmer's mariposa lily (*Calochortus palmeri* var. *palmeri*)
- Alkali mariposa lily (*Calochortus striatus*)
- Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*)
- White pygmy poppy (*Canbya candida*)
- Mojave Indian paintbrush (*Castilleja plagiotoma*)
- Southern tarplant (*Centromadia parryi* ssp. *australis*)
- Desert cymopterus (*Cymopterus deserticola*)
- Red Rock tarplant (*Deinandra arida*)
- Santa Susana tarplant (*Deinandra minthornii*)
- Mojave tarplant (*Deinandra mohavensis*)
- Blochman's dudleya *(Dudleya blochmaniae* ssp. *blochmaniae)*
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Tehachapi buckwheat (*Eriogonum callistum*)
- Barstow woolly sunflower (*Eriophyllum mohavense*)
- Red Rock poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*)
- Delicate bluecup (*Githopsis tenella*)
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)
- California satintail (*Imperata brevifolia*)
- Southern California black walnut (*Juglans californica*)
- Pale-yellow layia *(Layia heterotricha*)
- Ocellated lily (*Lilium humboldtii ssp. ocellatum)*
- Sagebrush loeflingia *(Loeflingia squarrosa* var. *artemisiarum*)
- Peirson's lupine (*Lupinus peirsonii*)
- Creamy blazing star (*Mentzelia tridentata*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)

- Gairdner's Yampah (*Perideridia gairdneri* ssp. *gairdneri*)
- Charlotte's phacelia (*Phacelia nashiana*)
- White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)
- Coulter's matilija poppy (*Romneya coulteri*)
- Southern jewel flower (*Streptanthus campestris*)
- Lemmon's syntrichopappus (*Syntrichopappus lemmonii*)

The 13 special-status plants that are unlikely to occur within Segment D include:

- Kusche's sandwort (*Arenaria macradenia* var. *kusche*)
- San Gabriel Manzanita (*Arctostaphylos gabrielensis*)
- Bear Valley woollypod *(Astragalus lentiginosus* var. *sierra*
- White-bracted spineflower *(Chorizanthe xanti* var. *leucotheca*)
- San Gabriel River dudleya (*Dudleya cymosa* ssp. *crebrifolia*)
- Kern buckwheat (*Eriogonum kennedyi* var. *pinicola*)
- Fragrant pitcher sage (*Lepechinia fragrans*)
- Rock monardella (*Monardella viridis* ssp. *saxicola*)
- Baja navarretia (*Navarretia peninsularis*)
- Rock Creek broomrape (*Orobanche valida* ssp. *valida*)
- Southern Mountains skullcap (*Scutellaria bolanderi* ssp. *austromontana*)
- Parish's checkerbloom (*Sidalcea hickmanii* ssp. *parishii*)
- Laguna Mountains jewel flower (*Streptanthus bernardinus*)

Two points were mapped on Segment D for slender mariposa lily (See Appendix B). Surveys found 11 individuals. In 2010 incidental observations of this species while driving along the transmission line resulted in an addition two points, each composed of four individuals. This species was found on all aspects except west-facing slopes, and primarily in burned chamise chaparral; they were also found on the edge of non-native grassland.

Twenty-one points were mapped on Segment D for short-joint beavertail. Each point represents one to six individuals, for a total of 40 individuals. Some of these short-joint beavertail species might be hybrids with beavertail cactus (*Opuntia basilaris* var. *basilaris*). This variety was located on all aspects and in burned and unburned chamise chaparral, buckwheat scrub, and at the edge of the non-native grasslands.

Direct impacts to special-status plant species may occur in a variety of ways, including the direct removal of plants during the course of construction. Because many sections of the access roads along Segment D, particularly the Old Ridge Route, are not wide enough to accommodate construction equipment, widening the drivable width of the roads may remove suitable habitat for one or more of these species and/or remove individuals that go undetected during preconstruction botany surveys. Clearing and grading associated with the placement of towers or the grading of access or spur roads may also result in the alteration of soil conditions, including the loss of native seed banks and changes to the topography and drainage of a site such that the capability of the habitat to support special-status species is impaired. Indirect impacts include the creation of conditions that are favorable for the invasion of weedy exotic species that prevent the establishment of desirable vegetation and may adversely affect wildlife. Construction on steep hillsides may also result in off-site sediment transport that may bury rare plants in adjacent habitat or alter soil conditions. Dust from road travel, grading, or other construction activities may also reduce photosynthetic capacity in plants over time or inhibit reproduction by physically coating reproductive structures or excluding insect pollinators. Soil disturbance may also result in the spread of invasive plant species. Trampling due to foot or vehicular traffic could result in soil compaction if it occurs repeatedly within any specific area; soil compaction may in turn lead to reduced water absorption and increased runoff, potentially contributing to an increase in non-native plant species, which could be more tolerant of these conditions. The Old Ridge Route is paved and soil compaction would be mostly limited to spur roads, tower sites, or areas where the paved access road may not be wide enough even with vegetation removal from within the road. Edison Spring Road, however, is a dirt road that will undergo soil compaction along its length and will be at greater risk of runoff or sedimentation.

The potential introduction or spread of noxious and invasive weeds would occur primarily during construction activities, but would also continue to occur during operation and maintenance phases of the Project. The introduction of noxious and invasive weeds would be related to ground disturbance from clearing and grading, expansion of access roads, construction of spur roads, and road maintenance; the use of vehicles, construction equipment, or earth materials contaminated with non-native plant seed; use of straw bales or wattles that contain seeds of non-native plant species; and enhanced public access to the Project corridor during and after construction. Additionally, weed seeds are often spread on equipment or clothing by construction or maintenance personnel. This would provide many avenues for new propagules (any part of a plant that may generate a new individual plant) to be carried into areas that previously were isolated from sources of noxious weed seeds. Direct impacts associated with the introduction of noxious weeds could occur when noxious weeds become established in an area. These invasive plant species can cause a permanent or long-lasting change to the environment by increasing vegetative cover, creating a dense layer that prevents native vegetation from germinating, altering the edaphic and hydrological conditions through nitrogen fixation (as in Spanish broom), or may drain the water table (as in giant reed). Noxious weeds can create such an unfavorable environment for wildlife that associate, mutualistic species necessary for native plant life cycles, such as seed dispersers, fossorial mammals, or pollinators, are lost from the area. Indirect impacts attributed to the colonization of noxious weeds could include a gradual decrease in natural biodiversity, as noxious weed infestations may extirpate native plant populations.

Operational impacts would also include trampling or crushing due to public use of new or improved spur roads and access roads, increased erosion, and the spread and colonization of noxious weeds. Other operational impacts include removal and trimming of vegetation during maintenance activities. Restoration activities may inadvertently lead to negative effects on special-status plant species, should they be present during construction. For instance, seed collection from native plants may result in the unintentional trampling of smaller listed species should they be present in the area, or in the removal of seeds from listed species. Effective preconstruction flagging of these species would assist in reducing the likelihood of incidental effects during seed collection or even weed removal. Weed removal may also lead to species that are not non-native being unintentionally treated or removed.

General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-24, GP-25, GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat).

TABLE 25. MITIGATION MEASURES APPLICABLE TO SEGMENT D

Wildlife Species	Mitigation Measures		Vegetation Community/Plant Species	Mitigation Measures
American Badger	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20		Scrub Oak Chaparral	AIR-2a, BIO-1, BIO-2, BIO-13
California Condor	HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-7, BIO-11,BIO-18		Southern Mixed Chaparral	AIR-2a, BIO-1, BIO-2, BIO-13
Coast (San Diego)	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5,		Riversidian Sage Scrub	AIR-2a, BIO-1, BIO-2,

Wildlife Species	Mitigation Measures	Vegetation Community/Plant Species	Mitigation Measures
Horned Lizard	BIO-6, BIO-22		BIO-4, BIO-6, BIO-13
Least Bell's Vireo	HYD-1, HYD-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-8, BIO-11, BIO-14	Chamise Chaparral	AIR-2a, BIO-1, BIO-2, BIO-13
Western Spadefoot Toad	AIR-2a, HYD-1, HYD-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6	Mojave Creosote Bush Scrub	AIR-2a, BIO-1, BIO-2,, BIO-13
Burrowing Owl	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-8, BIO-16	Joshua Tree Woodland	AIR-2a, BIO-1, BIO-2, BIO-13
Bat Species	HYD-1, BIO-1, BIO-2, BIO-4, BIO-5, BIO-6, BIO-21	Rabbitbrush Scrub	AIR-2a, BIO-1, BIO-2, BIO-13
Southern Grasshopper Mouse, Tehachapi Pocket Mouse, and San Diego Black-tailed Jackrabbit	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5 BIO-6, BIO-20	Southern Coast Live Oak Riparian Woodland	AIR-2a, BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-13
Desert Kit Fox	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20	Southern Cottonwood Willow Riparian Forest	AIR-2a, BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-13
Desert Tortoise	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-23	Southern Sycamore Alder Riparian Woodland	AIR-2a, BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-13
Coastal Rosy Boa	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-22	Southern Willow Scrub	AIR-2a, BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-13
Bald and Golden Eagle	HYD-1, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-7, BIO-8, BIO-11, BIO-17	Valley Oak Woodland	AIR-2a, BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-13
Raptors and Other Migratory Birds	HYD-1, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-8, BIO-11	Special-status Plant Species	AIR-2a, BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-13
General Wildlife	BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-8, BIO-11		

TABLE 26. BIOLOGICAL RESOURCES FOUND WITHIN SEGMENT D AND POTENTIAL ACREAGE OF DISTURBANCE

	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Known Special Status Wildlife Present				
American Badger	15.2	15.2	4.7	6.0
California Condor	2.9	2.9	0.6	0.8
USFS GIS Modeled Habitat				
California Red-legged Frog	17.1	17.1	5.9	7.6
Wildlife Range				
Desert Tortoise	78.3	78.3	20.3	28.3
Riparian Conservation Area				

	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Yes	30.9	30.9	12.4	16.0
Wildlife Corridor				
Yes	102.1	102.1	35.4	45.7
Avian Assessment Impacts				
Low	130.0	130.0	34.0	44.9
Moderate	115.7	115.7	35.3	46.3
High	37.8	37.8	9.0	11.5
Known Special Status Plant Species				
Short-joint Beavertail	7.1	7.1	2.5	3.3
Slender Mariposa Lily	0.6	0.6	0.2	0.2
Known Weed Species				
Blessed Thistle	1.2	1.2	0.4	0.5
Saltcedar	0.6	0.6	0.2	0.2
Prickly Russian Thistle	1.2	1.2	0.4	0.5
Tree Tobacco	0.6	0.6	0.2	0.2
Perennial Pepperweed				
Yellow Star thistle				
Smilograss				
Joshua Trees Present				
Yes	17.5	17.5	4.8	6.0
Riparian Community				
Southern Coast Live Oak Riparian Forest	0.7	0.7	0.1	0.1
Southern Cottonwood Willow Riparian Forest	0.9	0.9	0.2	0.4
Southern Sycamore Alder Riparian Woodland	0.7	0.7	0.2	0.3
Southern Willow Scrub	1.1	1.3	0.2	0.3
Valley Oak Woodland	2.7	2.7	0.6	1.0
Biological Protected Area				
Castaic Lake SRA	11.1	11.1	1.5	1.9
San Andreas Rift Zone SEA	45.7	45.7	9.9	11.8
Santa Clara River SEA	1.8	1.8	0.0	0.0
Vegetation				
Agricultural Land	3.5	3.5	1.0	1.9
California Annual Grassland	69.3	69.3	14.0	22.7
Chamise Chaparral	77.2	85.6	15.2	24.3
Disturbed/Developed	3.4	3.4	0.4	0.5
Joshua Tree Woodland	13.9	13.9	3.4	6.2
Mojave Creosote Bush Scrub	28.0	28.0	5.0	7.5
Rabbitbrush Scrub	13.0	13.0	3.2	5.9
Riversidian Sage Scrub	63.5	70.2	12.7	19.4
Scrub Oak Chaparral	0.1	0.1	0.0	0.0
Southern Mixed Chaparral	70.3	78.8	15.3	25.8

7.1.5 Segment E

This route joins the southern limits of Segments C and B. Its northern limit is located at N34°52.684, W118°27.503 and it runs at a bearing of 146° true for approximately 11.5 miles to its southern limit at N34°44.224, W118°20.585. The predominant habitat type encountered was agricultural land. Natural plant communities include non-native grassland and a portion of Mojave creosote scrub included in Los Angeles County's Significant Ecological Areas (SEA). Plant communities present in minor quantities include semi-desert chaparral, desert saltbrush scrub and Mojave mixed woody scrub. Two transmission lines (230 kV and 500 kV) are concomitant with this route. The area between MP 0 and MP 0.55 is composed mainly of semi-desert chaparral present among hilly terrain and a large wash. The area between MP 2.5 to MP 6.5 of Segment E consists of agricultural land. This Segment passes through roughly one half-mile of Mojave mixed woody scrub at MP 6.5. The link segment south of the Mojave mixed woody scrub is primarily composed of non-native grassland with small portions of agricultural area.

Wildlife

American Badger

Under Segment E, there may be direct or indirect construction impacts to American badger, expected to be have a possibility of occurring based on habitat and the identification of a badger burrow during 2008 desert habitat surveys (POWER 2009c). Tower construction and grading of new or existing access roads will result in habitat and vegetation loss, which may result in a temporary increase in food availability due to reduced cover for rodents and other species that badgers prey upon. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-20, will identify any possible active or inactive American badger burrows, but some burrows may still go unnoticed and may therefore be crushed or damaged by vehicles, heavy equipment, or trampling. This may in turn result in the injury or mortality of one or more badgers should they be present. Badgers may be displaced by construction activity, including noise and vibrations, but because their home ranges can be up to 400 acres for females and up to 600 acres for males it is likely that any displaced individuals would be able to expand outside of the construction zone without a significant impact on their well-being. However, any badgers in the area may be accustomed to human presence, as most of Segment E is within agricultural fields and there are residences associated with these fields.

General practices that would reduce short-term or long-term effects to American badger include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to American badger include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Desert Kit Fox

Under Segment E, there would be direct or indirect construction impacts to desert kit fox, expected to be likely to occur due to two burrows identified by POWER during 2008 desert habitat surveys (POWER 2009c). Tower construction and grading of new or existing access roads will result in habitat loss, which may result in a temporary increase in food availability by providing less cover for wildlife that the desert kit fox preys upon. However, this segment is already highly disturbed due to abundant agricultural fields and associated homes and buildings. Habitat degradation may also occur as a secondary effect of adjacent habitat loss or general construction access. This could result from the spread of non-native vegetation in the construction or access area or from excessive dust from construction in the desert area, necessitating the implementation of non-native weed prevention and dust control measures. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-20, will identify any possible active or inactive desert kit fox burrows to the extent possible within the agricultural fields, but any unnoticed burrows may be crushed during construction, possibly resulting in injury of mortality of one or more kit foxes that may be present. Nearby kit foxes may be scared away from the area or to other burrows by construction noise or vibrations, but as construction presence will only be temporary, it is expected that this would result in a short-term effect. It is likely that any present kit foxes are used to human presence due to the homes along this segment, but they may still be stressed enough by construction to cause dispersal.

General practices that would reduce short-term or long-term effects to desert kit fox include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to desert kit fox include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Burrowing Owl

Under Segment E, there may be direct or indirect construction impacts to burrowing owl, expected to have a possibility of occurring based on two reported sightings within 1.5 miles of the proposed ROW, which is fragmented by agricultural fields and associated buildings (CDFG 2010). Tower construction and grading of new or existing access roads will result in habitat fragmentation and vegetation loss, which will result in a degradation of the overall habitat quality, making it less appealing and less suitable for burrowing owls. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-16, will identify any possible active or inactive burrowing owl burrows, but some burrows may still go unnoticed or be incorrectly identified as rodent-only burrows and may therefore be crushed or damaged by vehicles, heavy equipment, or trampling. This may result in the injury or mortality of one or more owls if they are present. Where construction occurs near the agricultural fields and homes, it may draw the attention of scavengers or domesticated animals, resulting in an increased risk of predation. Because burrowing owls are most active at dusk and dawn (Zarn 1974) and have a reduced capability to forage at night (Voous 1988), the presence of humans, vehicles, and heavy equipment may disrupt any foraging or nesting practices during construction hours.

General practices that would reduce short-term or long-term effects to burrowing owl include GP-8, GP-23, GP-24, GP-25, GP-34, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to burrowing owl include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-16 (Protect burrowing owl).

Swainson's Hawk and Golden Eagle

Under Segment E, there may be direct or indirect effects to Swainson's hawk, expected to have a possibility to occur based on the presence of agricultural fields in the southern half of this segment, and golden eagle, expected to have a possibility to occur based on numerous sightings of golden eagles within the nearby Pacific Wind Energy Project area (Kern County 2010a) and PdV Wind Energy Project area (Kern County 2007). The agricultural fields are broken up by residences and other agricultural facilities. Construction of new towers and grading of new or existing access roads would result in vegetation and breeding habitat loss to this species. Eagles are not expected to be nesting in the area due to a lack of suitable nesting habitat, but should any hawks nest near the proposed ROW they may be displaced by construction disturbance. If this is the case, adults and/or their young would likely need to relocate, which could possibly result in indirect injury or mortality as they move to inhabit new locations. Power line design could result in injury or mortality to Swainson's hawks or golden eagles that are flying through the area or even perching on the towers, and appropriate tower design and protective measures will need to be enforced to prevent this. Birds, particularly raptors, are also known to perch, roost, or even nest on transmission structures (APLIC 2006). However, addition of a new transmission line on this segment is not expected to appreciably increase the risk of collision or electrocution because it would parallel two existing transmission lines.

General practices that would reduce short-term or long-term effects to Swainson's hawk and golden eagle include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Swainson's hawk and golden eagle include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-17 (Protect the bald eagle and golden eagle).

Loggerhead Shrike

Under Segment E, there may be direct or indirect effects to loggerhead shrike, expected to have a possibility of occurring due to availability of suitable habitat. Tower construction and grading of new or existing access roads would result in habitat and vegetation loss. This would cause habitat degradation which may make the area less appealing to loggerhead shrike individuals. It is expected that preconstruction surveys and/or biological monitoring will locate any nests within shrubs or trees in the area, although if any nests are not located, this could result in injury or mortality of individuals. Construction noise and human presence may cause birds to disperse from the area, potentially abandoning a nest if any birds are nesting nearby during construction.

General practices that would reduce short-term or long-term effects to loggerhead shrike include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to loggerhead shrike include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Pallid Bat and Western Mastiff Bat

Under Segment E, there may be direct or indirect construction impacts to pallid bat and western mastiff bat. Both species are expected to be likely to occur on this segment based on availability of shrubby foraging habitat and roosting habitat in agricultural buildings. Tower construction and grading of new or existing access roads will result in loss of foraging habitat and degradation in habitat quality, although tower construction may provide additional roosting habitat for the western mastiff bat. Pallid bats in particular are sensitive to human disturbance, but it is expected that any individuals which are roosting in this area are adapted to human presence and activity levels already. Should any bats be scared away, this can indirectly lead to injury or mortality if it results in encounters with equipment or in decreased fitness at a new location due to unfamiliarity. Mating for pallid bats occurs from October to February, birth from April to July, and final weaning in August; mating in western mastiff bats typically begins in early March with birth ending in September. Construction during certain time periods of these windows may be more disturbing to bat species than others, if present. Because bats are mainly nocturnal, any night construction would disturb them, disrupting foraging and potentially leading to injuries.

General practices that would reduce short-term or long-term effects to special-status bat species include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short-term or long-term effects to special-status bat species include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-21 (Protect sensitive bat species).

Avian Risk

Segment E poses a low risk to avian species, according to the Avian Risk Report. Risks on this segment include a recorded wetland within 0.5 mile, cutting between two habitat usage types, running perpendicular to prevailing winds, containing average wind speeds greater than 16.8 mph, and coming within 0.5 mile of a convergence or divergence of lines. Wetlands are routinely used as takeoff and landing points for birds, habitat separation can lead to collisions for birds flying between different areas (such as wetlands and agricultural areas), prevailing winds perpendicular to transmission lines increase the risk of collision into the lines, higher wind speeds are believed to result in lower numbers of avian migrants, and converging and diverging transmission lines can increase collision risk by causing birds to perform multiple evasive maneuvers. Potential effects as a result of these factors include collision and electrocution of birds at transmission lines. GP-8 and GP-11 would protect local and migratory bird species that may occur and reduce short-term and long-term effects to migratory bird species in the BRRTP area, respectively, while applicable mitigation measures include BIO-3 (Incorporate riparian area avoidance and permit measures) and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Other Wildlife

Common species which may occur along Segment E include species such as coyote, white-tailed antelope ground squirrel, western whiptail, and various unknown migratory bird species. Construction on Segment E may result in injury, mortality, or displacement of any of these species due to crushing or collision during grading of access roads or tower sites; loss of habitat or reduction in food availability during construction; and disturbance from construction noise and vibration leading to dispersal.

Vegetation Communities

The vegetation types of the proposed Segment E include:

- Agricultural Land
- California Annual Grassland
- Mojave Creosote Bush Scrub
- Joshua Tree Woodland

There are no known special-status plants within Segment E.

The 24 special-status plant species that are likely to occur within Segment E include:

- Nevin's barberry (*Berberis nevinii*)
- Round-leaved filaree (*California macrophylla*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Alkali mariposa lily (*Calochortus striatus*)
- Peirson's morning-glory (*Calystegia peirsonii*)
- White pygmy poppy (*Canbya candida*)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)
- White-bracted spineflower (*Chorizanthe xanti* var. *leucotheca*)
- Red Rock tarplant (*Deinandra arida*)
- Mojave tarplant (*Deinandra mohavensis*)
- Slender-horned spineflower (*Dodecahema leptoceras*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Barstow woolly sunflower (*Eriophyllum mohavense*)

- Red Rock poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*)
- Pale-yellow layia *(Layia heterotricha*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Creamy blazing star (*Mentzelia tridentata*)
- Short-joint beavertail (*Opuntia basilaris* var. *brachyclada)*
- Charlotte's phacelia (*Phacelia nashiana*)
- White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)
- Chaparral ragwort (*Senecio aphanactis*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- San Bernardino aster (*Symphyotrichum defoliatum*)

The 15 special-status plants that could possibly occur within Segment E include:

- California androsace (*Androsace elongata* ssp. *acuta*)
- Club-haired mariposa lil*y (Calochortus clavatus* var. *clavatus*)
- Mojav*e Indian paintbrush (Castilleja plagiotoma*)
- Southern tarplant (*Centromadia parryi* ssp. *australis*)
- Desert cymopterus (*Cymopterus deserticola*)
- Blochman's dudleya *(Dudleya blochmaniae* ssp. *blochmaniae)*
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)
- Southern California black walnut (*Juglans californica*)
- Ocellated lily (*Lilium humboldtii* ssp. *ocellatum*)
- Peirson's lupine (*Lupinus peirsonii*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)
- Ojai navarretia (*Navarretia ojaiensis*)
- Coulter's matilija poppy (*Romneya coulteri*)
- Lemmon's syntrichopappus (*Syntrichopappus lemmonii*)

The six special-status plants that are unlikely to occur within Segment E include:

- Bear Valley woollypod *(Astragalus lentiginosus* var. *sierra)*
- Slender mariposa lily (*Calochortus clavatus* var. *gracilis*)
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- California satintail (*Imperata brevifolia*)
- Baja navarretia (*Navarretia peninsularis*)
- Gairdner's yampah (*Perideridia gairdneri* ssp. *gairdneri*)

Direct impacts to special-status plant species may occur in a variety of ways, including the direct removal of plants during the course of construction. Clearing and grading associated with the placement of towers or the grading of access or spur roads may also result in the alteration of soil conditions, including the loss of native seed banks and changes to the topography and drainage of a site such that the capability of the habitat to support special-status species is impaired. Indirect impacts include the creation of conditions that are favorable for the invasion of weedy exotic species that prevent the establishment of desirable vegetation and may adversely affect wildlife. Dust from road travel, grading, or other construction activities may also reduce photosynthetic capacity in plants over time or inhibit reproduction by physically coating reproductive structures or excluding insect pollinators. Soil disturbance may also result in the spread of invasive plant species. Trampling due to foot or vehicular traffic could result in soil compaction if it occurs repeatedly within any specific area; soil compaction may in turn lead to reduced water absorption and increased runoff, potentially contributing to an increase in non-native plant species, which could be more tolerant of these conditions.

The potential introduction or spread of noxious and invasive weeds would occur primarily during construction activities, but would also continue to occur during operation and maintenance phases of the Project. The introduction of noxious and invasive weeds would be related to ground disturbance from clearing and grading, expansion of access roads, construction of spur roads, and road maintenance; the use of vehicles, construction equipment, or earth materials contaminated with non-native plant seed; use of straw bales or wattles that contain seeds of non-native plant species; and enhanced public access to the Project corridor during and after construction. Additionally, weed seeds are often spread on equipment or clothing by construction or maintenance personnel. This would provide many avenues for new propagules (any part of a plant that may generate a new individual plant) to be carried into areas that previously were isolated from sources of noxious weed seeds. Direct impacts associated with the introduction of noxious weeds could occur when noxious weeds become established in an area. These invasive plant species can cause a permanent or long-lasting change to the environment by increasing vegetative cover, creating a dense layer that prevents native vegetation from germinating, altering the edaphic and hydrological conditions through nitrogen fixation (as in Spanish broom), or may drain the water table (as in giant reed). Noxious weeds can create such an unfavorable environment for wildlife that associate, mutualistic species necessary for native plant life cycles, such as seed dispersers, fossorial mammals, or pollinators, are lost from the area. Indirect impacts attributed to the colonization of noxious weeds could include a gradual decrease in natural biodiversity, as noxious weed infestations may extirpate native plant populations.

Operational impacts would also include trampling or crushing due to public use of new or improved spur roads and access roads, increased erosion, and the spread and colonization of noxious weeds. Other operational impacts include removal and trimming of vegetation during maintenance activities. Restoration activities may inadvertently lead to negative effects on special-status plant species, should they be present during construction. For instance, seed collection from native plants may result in the unintentional trampling of smaller listed species should they be present in the area, or in the removal of seeds from listed species. Effective preconstruction flagging of these species would assist in reducing the likelihood of incidental effects during seed collection or even weed removal. Weed removal may also lead to species that are not non-native being unintentionally treated or removed.

General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-38, GP-39, GP-40, GP-48, GP-51, GP-52, GP-53, GP-59, GP-60, GP-61, GP-62, GP-67, and GP-69. Mitigation measures that would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat).

TABLE 27. MITIGATION MEASURES APPLICABLE TO SEGMENT E

Wildlife Species	Mitigation Measures		Vegetation Community/Plant Species	Mitigation Measures
American Badger	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20		Mojave Creosote Bush Scrub	AIR-2a, BIO-1, BIO-2, BIO-13
Kit Fox	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20		Joshua Tree Woodland	AIR-2a, BIO-1, BIO-2, BIO-13
Burrowing Owl	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-8, BIO-16			
Pallid Bat and Western Mastiff Bat	HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-21			
Golden Eagle	HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-7, BIO-11, BIO-17			

Wildlife Species	Mitigation Measures	Vegetation Community/Plant Species	Mitigation Measures
Raptors and Other Migratory Birds	HYD-1, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-8, BIO-11		
General Wildlife	BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-8, BIO-11		

TABLE 28. BIOLOGICAL RESOURCES FOUND WITHIN SEGMENT E AND POTENTIAL ACREAGE OF DISTURBANCE

	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Wildlife Range				
Desert Tortoise	66.0	66.0	10.5	11.3
Avian Assessment Impacts				
Low	53.7	53.7	8.9	9.6
Moderate	12.3	12.3	3.8	4.8
Joshua Trees Present				
Yes	4.7	4.7	1.0	1.2
Biological Protected Area				
Joshua Tree Woodlands SEA	6.4	6.4	1.5	1.8
San Andreas Rift Zone SEA	14.6	14.6	2.0	2.0
Vegetation				
Agricultural Land	37.7	37.7	5.4	5.5
California Annual Grassland	13.4	13.4	1.8	1.8
Joshua Tree Woodland	3.8	3.8	0.9	1.1
Mojave Creosote Bush Scrub	11.0	11.0	2.4	2.8

Because Segment E has been eliminated from consideration for construction, the data provided in this table for this segment has not been updated and reflects the most recent data before it was eliminated.

7.1.6 Segment F1

This route runs from its northern limit at N34°44.233, W118°20.608 to its southern limit at N34°41.483, W118°18.366 at a bearing of 146° true. Habitat composition in the survey corridor consists of agricultural land. Two transmission lines (230 kV and 500 kV) are concomitant with this route.

Wildlife

Burrowing Owl

Under Segment F1, there may be direct or indirect construction impacts to burrowing owl, expected to be present based on previous identification of one active burrowing owl burrow within 0.5 mile of the existing transmission line, a burrowing owl in flight approximately 0.3 mile north of the burrow, and over thirty potential burrows within one mile (LSA 2007d). Tower construction and grading of new or existing access roads will result in habitat fragmentation and vegetation loss, which will result in a degradation of the overall habitat quality, making it less appealing and less suitable for burrowing owls. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-16, will identify any possible active or inactive burrowing owl burrows, but some burrows may still go unnoticed or be incorrectly identified as rodent-only burrows and may therefore be crushed or damaged by vehicles, heavy equipment, or trampling. This may result in the injury or mortality of one or more owls if they are present. Where construction occurs near the home at 105th Street, it may draw the attention of scavengers or domesticated animals, resulting in an increased risk of predation. Because burrowing owls are most active at dusk and dawn (Zarn 1974) and have a reduced capability to forage at night (Voous 1988), the presence of humans, vehicles, and heavy equipment may disrupt any foraging or nesting practices during construction hours.

General practices that would reduce short-term or long-term effects to burrowing owl include GP-8, GP-23, GP-24, GP-25, GP-34, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to burrowing owl include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-16 (Protect burrowing owl).

Swainson's Hawk

Under Segment F1, there may be direct or indirect effects to Swainson's hawk, expected to have a possibility to occur based on the presence of poor-quality grassland in the upper end of the Alternative, nesting habitat on existing towers and some pockets of trees around residences. Construction of new towers and grading of new or existing access roads would result in foraging habitat loss to this species; however, the restoration plan would require restoration and/or compensation for habitats impacted by this Project. Direct injury or mortality from construction is not expected based on the lack of recorded sightings, but if any hawks nest near the proposed ROW, they may be displaced by construction disturbance. If this is the case, adults and/or their young would likely need to relocate, which could possibly result in indirect injury or mortality as they move to inhabit new locations. Power line design could result in injury or mortality to Swainson's hawks that are flying through the area or even perching on the towers, and appropriate tower design and protective measures will need to be enforced to prevent this. Birds, particularly raptors, are also known to perch, roost, or even nest on transmission structures (APLIC 2006). However, addition of a new transmission line on this segment is not expected to appreciably increase the risk of collision or electrocution because there are already numerous lines on this segment culminating at the nearby Antelope Substation.

General practices that would reduce short-term or long-term effects to Swainson's hawk include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Swainson's hawk include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Loggerhead Shrike

Under Segment F1, there may be direct or indirect effects to loggerhead shrike, expected to have a possibility of occurring due to availability of suitable habitat. Tower construction and grading of new or existing access roads would result in habitat and vegetation loss. This would cause habitat degradation which may make the area less appealing to loggerhead shrike individuals. It is expected that preconstruction surveys and/or biological monitoring will locate any nests within shrubs or trees in the area, although if any nests are not located, this could result in injury or mortality of individuals. Construction noise and human presence may cause birds to disperse from the area, potentially abandoning a nest if any birds are nesting nearby during construction.

General practices that would reduce short-term or long-term effects to loggerhead shrike include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to loggerhead shrike include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Western Mastiff Bat

Under Segment F1, there may be direct or indirect construction impacts to western mastiff bat, expected to be likely to occur on this segment based on availability of shrubby foraging habitat and roosting habitat in agricultural buildings and existing transmission lines. Tower construction and grading of new or existing access roads would result in loss of foraging habitat and degradation in habitat quality, although tower construction may provide additional roosting habitat for the western mastiff bat. Construction during summer months, when bat activity is higher, may cause a greater degree of disturbance to the bats, potentially leading to their abandonment of the area (Vaughan and O'Shea 1976, Piaggio 2005). This can indirectly lead to injury or mortality if it results in encounters with equipment or in decreased fitness at a new location due to unfamiliarity. The bats would likely return to the same roost the following season, if it were still available (B. Doering personal communication 2011). Mating in western mastiff bats typically begins in early March with birth ending in September (Reid 2006). Construction during certain time periods of these windows may be more disturbing, if bats are present.

Should a bat roost be disturbed by construction, it may result in complete abandonment of the roost. This may lead to complete nesting failure for the season, resulting in a loss of that year's new bat births. Because bats are mainly nocturnal, any night construction would disturb them, disrupting foraging and potentially leading to injuries. Disruption of hibernation is unlikely given the generally warm winters in Southern California. McNab (1974) suggests that only bats that are both small and do not cluster in groups can hibernate when the environmental temperature is above 14°C (57.2°F). Western mastiff bats cluster in groups of 30 to several hundred and do not undergo long periods of hibernation, instead remaining periodically active throughout the winter (Siders 2005). It is likely that bats in the Project area would periodically enter states of torpor but would generally remain relatively active compared to bats in colder parts of the country, where hibernation is more feasible.

General practices that would reduce short-term or long-term effects to western mastiff bat include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short-term or long-term effects to western mastiff bat include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-21 (Protect sensitive bat species).

American Badger

Under Segment F1, there may be direct or indirect construction impacts to American badger, expected to have a possibility of occurring based on availability of suitable habitat. Tower construction and grading of new or existing access roads will result in habitat and vegetation loss, which may result in a temporary increase in food availability due to reduced cover for rodents and other species that badgers prey upon. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-20, will identify any possible active or inactive American badger burrows, but some burrows may still go unnoticed and may therefore be crushed or damaged by vehicles, heavy equipment, or trampling. This may in turn result in the injury or mortality of one or more badgers should they be present. Badgers may be displaced by construction activity, including noise and vibrations, but because their home ranges can be up to 400 acres for females and up to 600 acres for males it is likely that any displaced individuals would be able to expand outside of the construction zone without a significant impact on their well-being. However, any badgers in the area may be accustomed to human presence, as this area is crossed by several roads and houses.

General practices that would reduce short-term or long-term effects to American badger include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to American badger include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Desert Kit Fox

Under Segment F1, there would be direct or indirect construction impacts to desert kit fox, expected to have a possibility of occurring due to availability of shrubby-grassland habitat. Tower construction and grading of new or existing access roads will result in habitat loss, which may result in a temporary increase in food availability by providing less cover for wildlife that the desert kit fox preys upon. However, this segment is already disturbed due to agricultural fields and associated homes and buildings, along with roads. Habitat degradation may also occur as a secondary effect of adjacent habitat loss or general construction access. This could result from the spread of non-native vegetation in the construction or access area or from excessive dust from construction in the desert area, necessitating the implementation of non-native weed prevention and dust control measures. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-20, will identify any possible active or inactive desert kit fox burrows to the extent possible within the agricultural fields, but any unnoticed burrows may be crushed during construction, possibly resulting in injury of mortality of one or more kit foxes that may be present. Nearby kit foxes may be scared away from the area or to other burrows by construction noise or vibrations, but as construction presence will only be temporary, it is expected that this would result in a short-term effect. It is likely that any present kit foxes are used to human presence due to the roads and traffic along this segment, but they may still be stressed enough by construction to cause dispersal.

General practices that would reduce short-term or long-term effects to desert kit fox include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to desert kit fox include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Avian Risk

Segment F1 poses a low risk to avian species, according to the Avian Risk Assessment. It is perpendicular to prevailing winds and average wind speeds in this area are higher than 16.8 mph. Prevailing winds perpendicular to transmission lines increase the risk of collision into the lines, and higher wind speeds are believed to result in lower numbers of avian migrants. Effects from BRRTP will be minimized by the implementation of mitigation measures Potential effects as a result of these factors include collision and electrocution of birds at transmission lines. GP-8 and GP-11 would protect local and migratory bird species that may occur and reduce short-term and long-term effects to migratory bird species in the BRRTP area, respectively, while applicable mitigation measures include BIO-3 (Incorporate riparian area avoidance and permit measures) and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Other Wildlife

Common species which may occur along Segment F1 include species such as coyote, western whiptail, white-tailed antelope ground squirrel, and various unknown migratory bird species. Construction on Segment F1 may result in injury, mortality, or displacement of any of these species due to crushing or collision during grading of access roads or tower sites; loss of habitat or reduction in food availability during construction; and disturbance from construction noise and vibration leading to dispersal.

Vegetation Communities

The vegetation types observed within the proposed Segment F1include:

- Agricultural land

There are no special-status plant species known on Segment F1.

The three special-status plant species that are likely to occur within Segment F1 include:

- Round-leaved filaree (*California macrophylla*)
- Peirson's morning-glory (*Calystegia peirsonii*)
- Pale-yellow layia *(Layia heterotricha*)

The 14 special-status plants that could possibly occur within Segment F1 include:

- California androsace (*Androsace elongata* ssp. *acuta*)
- Braunton's milk-vetch (*Astragalus brauntonii*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Slender-horned spineflower (*Dodecahema leptoceras*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)
- Ojai navarretia (*Navarretia ojaiensis*)
- White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)
- Chaparral ragwort (*Senecio aphanactis*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- San Bernardino aster (*Symphyotrichum defoliatum*)

The five special-status plants that are unlikely to occur within Segment F1 include:

- Slender mariposa lily (*Calochortus clavatus* var. *gracilis*)
- Southern tarplant (*Centromadia parryi* ssp. *australis*)
- Blochman's dudleya *(Dudleya blochmaniae* ssp. *blochmaniae)*
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- Baja navarretia (*Navarretia peninsularis*)
- Gairdner's yampah (*Perideridia gairdneri* ssp. *gairdneri*)

Direct impacts to special-status plant species may occur in a variety of ways, including the direct removal of plants during the course of construction. Clearing and grading associated with the placement of towers or the grading of access or spur roads may also result in the alteration of soil conditions, including the loss of native seed banks and changes to the topography and drainage of a site such that the capability of the habitat to support special-status species is impaired. Indirect impacts include the creation of conditions that are favorable for the invasion of weedy exotic species that prevent the establishment of desirable vegetation and may adversely affect wildlife. Dust from road travel, grading, or other construction activities may also reduce photosynthetic capacity in plants over time or inhibit reproduction by physically coating reproductive structures or excluding insect pollinators. Soil disturbance may also result in the spread of invasive plant species. Trampling due to foot or vehicular traffic could result in soil compaction if it occurs repeatedly within any specific area; soil compaction may in turn lead to reduced water absorption and increased runoff, potentially contributing to an increase in non-native plant species, which could be more tolerant of these conditions.

The potential introduction or spread of noxious and invasive weeds would occur primarily during construction activities, but would also continue to occur during operation and maintenance phases of the Project. The introduction of noxious and invasive weeds would be related to ground disturbance from clearing and grading, expansion of access roads, construction of spur roads, and road maintenance; the use of vehicles, construction equipment, or earth materials contaminated with non-native plant seed; use of straw bales or wattles that contain seeds of non-native plant species; and enhanced public access to the Project corridor during and after construction. Additionally, weed seeds are often spread on equipment or clothing by construction or maintenance personnel. This would provide many avenues for new propagules (any part of a plant that may generate a new individual plant) to be carried into areas that previously were isolated from sources of noxious weed seeds. Direct impacts associated with the introduction of noxious weeds could occur when noxious weeds become established in an area. These invasive plant species can cause a permanent or long-lasting change to the environment by increasing vegetative cover, creating a dense layer that prevents native vegetation from germinating, altering the edaphic and hydrological conditions through nitrogen fixation (as in Spanish broom), or may drain the water table (as in giant reed). Noxious weeds can create such an unfavorable environment for wildlife that associate, mutualistic species necessary for native plant life cycles, such as seed dispersers, fossorial mammals, or pollinators, are lost from the area. Indirect impacts attributed to the colonization of noxious weeds could include a gradual decrease in natural biodiversity, as noxious weed infestations may extirpate native plant populations.

Operational impacts would also include trampling or crushing due to public use of new or improved spur roads and access roads, increased erosion, and the spread and colonization of noxious weeds. Other operational impacts include removal and trimming of vegetation during maintenance activities. Restoration activities may inadvertently lead to negative effects on special-status plant species, should they be present during construction. For instance, seed collection from native plants may result in the unintentional trampling of smaller listed species should they be present in the area, or in the removal of seeds from listed species. Effective preconstruction flagging of these species would assist in reducing the likelihood of incidental effects during seed collection or even weed removal. Weed removal may also lead to species that are not non-native being unintentionally treated or removed.

General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-38, GP-39, GP-40, GP-48, GP-51, GP-52, GP-53, GP-59, GP-60, GP-61, GP-62, GP-67, and GP-69. Mitigation measures that would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat).

TABLE 29. MITIGATION MEASURES APPLICABLE TO SEGMENT F1

Wildlife Species	Mitigation Measures		Vegetation Community/Plant Species	Mitigation Measures
Burrowing Owl	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-8, BIO-16		N/A	N/A

Wildlife Species	Mitigation Measures		Vegetation Community/Plant Species	Mitigation Measures
Western Mastiff Bat	HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-21			
American Badger	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20			
Kit Fox	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20			
Raptors and Other Migratory Birds	HYD-1, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-8, BIO-11			
General Wildlife	BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-8, BIO-11			

TABLE 30. BIOLOGICAL RESOURCES FOUND WITHIN SEGMENT F1 AND POTENTIAL ACREAGE OF DISTURBANCE

	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Avian Assessment Impacts				
Low	5.3	5.3	0.7	0.7
Vegetation				
Agricultural Land	5.9	5.9	0.7	0.7

7.1.7 Segment F2

This route runs from its northern limit at N34°44.233, W118°20.608 to its southern limit at N34°41.483, W118°18.366 at a bearing of 146° true. Habitat composition in the survey corridor is roughly 50% agricultural land and 50% non-native grassland. Two transmission lines (230 kV and 500 kV) are concomitant with this route.

Wildlife

Burrowing Owl

Under Segment F2, there may be direct or indirect construction impacts to burrowing owl, expected to be present based on previous identification of one active burrowing owl burrow within 0.5 mile of the existing transmission line, a burrowing owl in flight approximately 0.3 mile north of the burrow, and over thirty potential burrows within one mile (LSA 2007d). Tower construction and grading of new or existing access roads will result in habitat fragmentation and vegetation loss, which will result in a degradation of the overall habitat quality, making it less appealing and less suitable for burrowing owls. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-16, will identify any possible active or inactive burrowing owl burrows, but some burrows may still go unnoticed or be incorrectly identified as rodent-only burrows and may therefore be crushed or damaged by vehicles, heavy equipment, or trampling. This may result in the injury or mortality of one or more owls if they are present. Where construction occurs near the home at 105th Street, it may draw the attention of scavengers or domesticated animals, resulting in an increased risk of predation. Because burrowing owls are most active at dusk and dawn (Zarn 1974) and have a reduced capability to forage at night (Voous 1988), the presence of humans, vehicles, and heavy equipment may disrupt any foraging or nesting practices during construction hours.

General practices that would reduce short-term or long-term effects to burrowing owl include GP-8, GP-23, GP-24, GP-25, GP-34, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to burrowing owl include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-16 (Protect burrowing owl).

Swainson's Hawk

Under Segment F2, there may be direct or indirect effects to Swainson's hawk, expected to have a possibility to occur based on the presence of agricultural fields for foraging habitat. Construction of new towers and grading of new or existing access roads would result in vegetation and breeding habitat loss to this species; however, the restoration plan would require restoration and/or compensation for habitats impacted by this Project. Direct injury or mortality from construction is not expected based on the lack of recorded sightings, but if any hawks nest near the proposed ROW, they may be displaced by construction disturbance. If this is the case, adults and/or their young would likely need to relocate, which could possibly result in indirect injury or mortality as they move to inhabit new locations. Power line design could result in injury or mortality to Swainson's hawks that are flying through the area or even perching on the towers, and appropriate tower design and protective measures will need to be enforced to prevent this. Birds, particularly raptors, are also known to perch, roost, or even nest on transmission structures (APLIC 2006). However, addition of a new transmission line on this segment is not expected to appreciably increase the risk of collision or electrocution because there are already numerous lines on this segment culminating at Antelope Substation.

General practices that would reduce short-term or long-term effects to Swainson's hawk include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Swainson's hawk include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Loggerhead Shrike

Under Segment F2, there may be direct or indirect effects to loggerhead shrike, expected to have a possibility of occurring due to availability of suitable habitat. Tower construction and grading of new or existing access roads would result in habitat and vegetation loss. This would cause habitat degradation which may make the area less appealing to loggerhead shrike individuals. It is expected that preconstruction surveys and/or biological monitoring will locate any nests within shrubs or trees in the area, although if any nests are not located, this could result in injury or mortality of individuals. Construction noise and human presence may cause birds to disperse from the area, potentially abandoning a nest if any birds are nesting nearby during construction.

General practices that would reduce short-term or long-term effects to loggerhead shrike include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to loggerhead shrike include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness

Program), and BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Western Mastiff Bat

Under Segment F2, there may be direct or indirect construction impacts to western mastiff bat, expected to be likely to occur on this segment based on availability of shrubby foraging habitat and roosting habitat in agricultural buildings and existing transmission lines. Tower construction and grading of new or existing access roads would result in loss of foraging habitat and degradation in habitat quality, although tower construction may provide additional roosting habitat for the western mastiff bat. Construction during summer months, when bat activity is higher, may cause a greater degree of disturbance to the bats, potentially leading to their abandonment of the area (Vaughan and O'Shea 1976, Piaggio 2005). This can indirectly lead to injury or mortality if it results in encounters with equipment or in decreased fitness at a new location due to unfamiliarity. The bats would likely return to the same roost the following season, if it were still available (B. Doering personal communication 2011). Mating in western mastiff bats typically begins in early March with birth ending in September (Reid 2006). Construction during certain time periods of these windows may be more disturbing, if bats are present.

Should a bat roost be disturbed by construction, it may result in complete abandonment of the roost. This may lead to complete nesting failure for the season, resulting in a loss of that year's new bat births. Because bats are mainly nocturnal, any night construction would disturb them, disrupting foraging and potentially leading to injuries. Disruption of hibernation is unlikely given the generally warm winters in Southern California. McNab (1974) suggests that only bats that are both small and do not cluster in groups can hibernate when the environmental temperature is above 14°C (57.2°F). Western mastiff bats cluster in groups of 30 to several hundred and do not undergo long periods of hibernation, instead remaining periodically active throughout the winter (Siders 2005). It is likely that bats in the Project area would periodically enter states of torpor but would generally remain relatively active compared to bats in colder parts of the country, where hibernation is more feasible.

General practices that would reduce short-term or long-term effects to western mastiff bat include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short-term or long-term effects to western mastiff bat include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-21 (Protect sensitive bat species).

American Badger

Under Segment F2, there may be direct or indirect construction impacts to American badger, expected to be have a possibility of occurring based on availability of suitable habitat. Tower construction and grading of new or existing access roads will result in habitat and vegetation loss, which may result in a temporary increase in food availability due to reduced cover for rodents and other species that badgers prey upon. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-20, will identify any possible active or inactive American badger burrows, but some burrows may still go unnoticed and may therefore be crushed or damaged by vehicles, heavy equipment, or trampling. This may in turn result in the injury or mortality of one or more badgers should they be present. Badgers may be displaced by construction activity, including noise and vibrations, but because their home ranges can be up to 400 acres for females and up to 600 acres for males it is likely that any displaced individuals would be able to expand outside of the construction zone without a significant impact on their well-being. However, any badgers in the area may be accustomed to human presence, as this area is crossed by numerous roads and several homes.

General practices that would reduce short-term or long-term effects to American badger include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to American badger include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Desert Kit Fox

Under Segment F2, there would be direct or indirect construction impacts to desert kit fox, expected to have a possibility of occurring due to availability of shrubby-grassland habitat. Tower construction and grading of new or existing access roads will result in habitat loss, which may result in a temporary increase in food availability by providing less cover for wildlife that the desert kit fox preys upon. However, this segment is already disturbed due to agricultural fields and associated homes and buildings, along with roads. Habitat degradation may also occur as a secondary effect of adjacent habitat loss or general construction access. This could result from the spread of non-native vegetation in the construction or access area or from excessive dust from construction in the desert area, necessitating the implementation of non-native weed prevention and dust control measures. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-20, will identify any possible active or inactive desert kit fox burrows to the extent possible within the agricultural fields, but any unnoticed burrows may be crushed during construction, possibly resulting in injury of mortality of one or more kit foxes that may be present. Nearby kit foxes may be scared away from the area or to other burrows by construction noise or vibrations, but as construction presence will only be temporary, it is expected that this would result in a short-term effect. It is likely that any present kit foxes are used to human presence due to the roads and traffic along this segment, but they may still be stressed enough by construction to cause dispersal.

General practices that would reduce short-term or long-term effects to desert kit fox include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to desert kit fox include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Avian Risk

Segment F2 poses both a low and moderate risk to avian species depending on specific areas of it, according to the Avian Risk Assessment. Risk factors applicable to Segment F2 include having a recorded wetland and a reservoir or lake within 0.5 mile of the segment, as well as being perpendicular to winds which are, on average, greater than 16.8 mph. Wetlands and water bodies are routinely used as takeoff and landing points for birds, while prevailing winds perpendicular to transmission lines increase the risk of collision into the lines, and higher wind speeds are believed to result in lower numbers of avian migrants. Potential effects as a result of these factors include collision and electrocution of birds at transmission lines. GP-8 and GP-11 would protect local and migratory bird species that may occur and reduce short-term and long-term effects to migratory bird species in the BRRTP area, respectively, while applicable mitigation measures include BIO-3 (Incorporate riparian area avoidance and permit measures) and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Other Wildlife

Common species which may occur along Segment F2 include species such as coyote, western whiptail, white-tailed antelope ground squirrel, and various unknown migratory bird species. Construction on Segment F2 may result in injury, mortality, or displacement of any of these species due to crushing or collision during grading of access roads or tower sites; loss of habitat or reduction in food availability during construction; and disturbance from construction noise and vibration leading to dispersal.

Vegetation Communities

The vegetation types observed within the proposed Segment F2 include:

- California Annual Grassland
- Agricultural Land

There are no special-status plant species known on Segment F2.

The three special-status plant species that are likely to occur within Segment F2 include:

- Round-leaved filaree (*California macrophylla*)
- Peirson's morning-glory (*Calystegia peirsonii*)
- Pale-yellow layia *(Layia heterotricha*)

The 14 special-status plants that could possibly occur within Segment F2 include:

- California androsace (*Androsace elongata* ssp. *acuta*)
- Braunton's milk-vetch (*Astragalus brauntonii*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Slender-horned spineflower (*Dodecahema leptoceras*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)
- Ojai navarretia (*Navarretia ojaiensis*)
- White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)
- Chaparral ragwort (*Senecio aphanactis*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- San Bernardino aster (*Symphyotrichum defoliatum*)

The five special-status plants that are unlikely to occur within Segment F2 include:

- Slender mariposa lily (*Calochortus clavatus* var. *gracilis*)
- Southern tarplant (*Centromadia parryi* ssp. *australis*)
- Blochman's dudleya *(Dudleya blochmaniae* ssp. *blochmaniae)*
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- Baja navarretia (*Navarretia peninsularis*)
- Gairdner's yampah (*Perideridia gairdneri* ssp. *gairdneri*)

Direct impacts to special-status plant species may occur in a variety of ways, including the direct removal of plants during the course of construction. Clearing and grading associated with the placement of towers or the grading of access or spur roads may also result in the alteration of soil conditions, including the loss of native seed banks and changes to the topography and drainage of a site such that the capability of the habitat to support special-status species is impaired. Indirect impacts include the creation of conditions that are favorable for the invasion of weedy exotic species that prevent the establishment of desirable vegetation and may adversely affect wildlife. Dust from road travel, grading, or other construction activities may also reduce photosynthetic capacity in plants over time or inhibit reproduction by physically coating reproductive structures or excluding insect pollinators. Soil disturbance may also result in the spread of invasive plant species. Trampling due to foot or vehicular traffic could result in soil compaction if it occurs repeatedly within any specific area; soil compaction may in turn lead to reduced water absorption and increased runoff, potentially contributing to an increase in non-native plant species, which could be more tolerant of these conditions.

The potential introduction or spread of noxious and invasive weeds would occur primarily during construction activities, but would also continue to occur during operation and maintenance phases of the Project. The introduction of noxious and invasive weeds would be related to ground disturbance from clearing and grading, expansion of access roads, construction of spur roads, and road maintenance; the use of vehicles, construction equipment, or earth materials contaminated with non-native plant seed; use of straw bales or wattles that contain seeds of non-native plant species; and enhanced public access to the Project corridor during and after construction. Additionally, weed seeds are often spread on equipment or clothing by construction or maintenance personnel. This would provide many avenues for new propagules (any part of a plant that may generate a new individual plant) to be carried into areas that previously were isolated from sources of noxious weed seeds. Direct impacts associated with the introduction of noxious weeds could occur when noxious weeds become established in an area. These invasive plant species can cause a permanent or long-lasting change to the environment by increasing vegetative cover, creating a dense layer that prevents native vegetation from germinating, altering the edaphic and hydrological conditions through nitrogen fixation (as in Spanish broom), or may drain the water table (as in giant reed). Noxious weeds can create such an unfavorable environment for wildlife that associate, mutualistic species necessary for native plant life cycles, such as seed dispersers, fossorial mammals, or pollinators, are lost from the area. Indirect impacts attributed to the colonization of noxious weeds could include a gradual decrease in natural biodiversity, as noxious weed infestations may extirpate native plant populations.

Operational impacts would also include trampling or crushing due to public use of new or improved spur roads and access roads, increased erosion, and the spread and colonization of noxious weeds. Other operational impacts include removal and trimming of vegetation during maintenance activities. Restoration activities may inadvertently lead to negative effects on special-status plant species, should they be present during construction. For instance, seed collection from native plants may result in the unintentional trampling of smaller listed species should they be present in the area, or in the removal of seeds from listed species. Effective preconstruction flagging of these species would assist in reducing the likelihood of incidental effects during seed collection or even weed removal. Weed removal may also lead to species that are not non-native being unintentionally treated or removed.

General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-24, GP-25, GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat).

TABLE 31. MITIGATION MEASURES APPLICABLE TO SEGMENT F2

Wildlife Species	Mitigation Measures		Vegetation Community/Plant Species	Mitigation Measures
Burrowing Owl	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-8, BIO-16		N/A	N/A

Wildlife Species	Mitigation Measures		Vegetation Community/Plant Species	Mitigation Measures
Western Mastiff Bat	HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-21			
American Badger	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20			
Kit Fox	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20			
Raptors and Other Migratory Birds	HYD-1, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-8, BIO-11			
General Wildlife	BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-8, BIO-11			

TABLE 32. BIOLOGICAL RESOURCES FOUND WITHIN SEGMENT F2 AND POTENTIAL ACREAGE OF DISTURBANCE

	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Avian Assessment Impacts				
Low	5.3	5.3	0.7	0.7
Moderate	11.1	11.1	2.8	3.5
Vegetation				
Agricultural Land	6.5	6.5	0.8	0.8
California Annual Grassland	11.7	11.7	2.6	4.6

7.1.8 Segment 115

This route runs from its northern limit at N34°43.404, W118°19.996 to its southern limit at N34°39.310, W118°19.644 at a bearing of 176° true. Habitat composition in the survey corridor is roughly 50% agricultural land and 50% non-native grassland. There are no existing transmission lines in this proposed corridor.

Wildlife

Burrowing Owl

Under Segment 115, there may be direct or indirect construction impacts to burrowing owl, expected to be likely to occur based on previous identification of one active burrowing owl burrow, a burrowing owl in flight, and over thirty potential burrows approximately one mile from this segment, although these are the closest known recorded occurrences (LSA 2007d). Tower construction and grading of new or existing access roads will result in habitat fragmentation and vegetation loss, which will result in a degradation of the overall habitat quality, making it less appealing and less suitable for burrowing owls. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-16, will identify any possible active or inactive burrowing owl burrows, but some burrows may still go unnoticed or be incorrectly identified as rodent-only burrows and may therefore be crushed or damaged by vehicles, heavy equipment, or trampling. This may result in the injury or mortality of one or more owls if they are present. Burrowing owls which are flushed from their burrows by construction will experience a possibly-increased risk of predation. Because burrowing owls are most active at dusk and dawn (Zarn 1974) and have a reduced capability to forage at night (Voous 1988), the presence of humans, vehicles, and heavy equipment may disrupt any foraging or nesting practices during construction hours.

General practices that would reduce short-term or long-term effects to burrowing owl include GP-8, GP-23, GP-24, GP-25, GP-34, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to burrowing owl include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-16 (Protect burrowing owl).

Swainson's Hawk

Under Segment 115, there may be direct or indirect effects to Swainson's hawk, expected to have a possibility to occur based on the presence of agricultural fields for foraging habitat. Construction of new towers and grading of new or existing access roads would result in vegetation and breeding habitat loss to this species. If any hawks nest near the proposed ROW, they may be displaced by construction disturbance. If this is the case, adults and/or their young would likely need to relocate, which could possibly result in indirect injury or mortality as they move to inhabit new locations. Power line design could result in injury or mortality to Swainson's hawks that are flying through the area or even perching on the towers, and appropriate tower design and protective measures will need to be enforced to prevent this. Birds, particularly raptors, are also known to perch, roost, or even nest on transmission structures (APLIC 2006).

General practices that would reduce short-term or long-term effects to Swainson's hawk include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Swainson's hawk include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

American Badger

Under Segment 115, there may be direct or indirect construction impacts to American badger, expected to be have a possibility of occurring based on availability of suitable plains-like habitat. Tower construction and grading of new or existing access roads will result in habitat and vegetation loss, which may result in a temporary increase in food availability due to reduced cover for rodents and other species that badgers prey upon. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-20, will identify any possible active or inactive American badger burrows, but some burrows may still go unnoticed and may therefore be crushed or damaged by vehicles, heavy equipment, or trampling. This may in turn result in the injury or mortality of one or more badgers should they be present. Badgers may be displaced by construction activity, including noise and vibrations, but because their home ranges can be up to 400 acres for females and up to 600 acres for males, it is likely that any displaced individuals would be able to expand outside of the construction zone without a significant impact on their well-being. However, any badgers in the area may be accustomed to human presence due to the roads and traffic through the area.

General practices that would reduce short-term or long-term effects to American badger include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to American badger include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5

(Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Desert Kit Fox

Under Segment 115, there would be direct or indirect construction impacts to desert kit fox, expected to have a possibility of occurring due to availability of shrubby-grassland habitat. Tower construction and grading of new or existing access roads will result in habitat loss, which may result in a temporary increase in food availability by providing less cover for wildlife that the desert kit fox preys upon. However, this segment is already disturbed due to agricultural fields and associated homes and buildings, along with roads. Habitat degradation may also occur as a secondary effect of adjacent habitat loss or general construction access. This could result from the spread of non-native vegetation in the construction or access area or from excessive dust from construction in the desert area, necessitating the implementation of non-native weed prevention and dust control measures. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-20, will identify any possible active or inactive desert kit fox burrows to the extent possible within the agricultural fields, but any unnoticed burrows may be crushed during construction, possibly resulting in injury of mortality of one or more kit foxes that may be present. Nearby kit foxes may be scared away from the area or to other burrows by construction noise or vibrations, but as construction presence will only be temporary, it is expected that this would result in a short-term effect. It is likely that any present kit foxes are to an extent used to human presence due to the roads and vehicular presence along this segment, but they may still be stressed enough by construction to cause dispersal.

General practices that would reduce short-term or long-term effects to desert kit fox include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to desert kit fox include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Avian Risk

Segment 115 poses a low risk to avian species, according to the Avian Risk Assessment. Risk factors that are applicable on this segment include having a new transmission corridor, crossing a wetland, having wind speeds greater than 16.8 mph, and being within 0.5 mile of an existing transmission line convergence or divergence. New transmission corridors pose collision risks to birds because they are not expecting the lines to be there, prevailing winds perpendicular to transmission lines increase the risk of collision into the lines, higher wind speeds are believed to result in lower numbers of avian migrants, and converging and diverging transmission lines can increase collision risk by causing birds to perform multiple evasive maneuvers. Potential effects as a result of these factors include collision and electrocution of birds at transmission lines. GP-8 and GP-11 would protect local and migratory bird species that may occur and reduce short-term and long-term effects to migratory bird species in the BRRTP area, respectively, while applicable mitigation measures include BIO-3 (Incorporate riparian area avoidance and permit measures) and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Other Wildlife

While there are no reported occurrences of special-status species along Segment 115, certain common species may still occur. Common species which may occur along Segment 115 include species such as coyote, western whiptail, white-tailed antelope ground squirrel, and various unknown migratory bird species. Construction on Segment 115 may result in injury, mortality, or displacement of any of these species due to crushing or collision during grading of access roads or tower sites; loss of habitat or reduction in food availability during construction; and disturbance from construction noise and vibration leading to dispersal.

Vegetation Communities

The vegetation types observed within the proposed Segment 115 include:

- California Annual Grassland
- Agricultural Land
- Riversidian Sage Scrub

No special-status plant species are known to be present within Segment 115.

The three special-status plant species that are likely to occur within Segment 115 include:

- Round-leaved filaree (*California macrophylla*)
- Peirson's morning glory (*Calystegia peirsonii*)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)

The 25 special-status plants that could possibly occur within Segment 115 include:

- California androsace (*Androsace elongata* ssp. *acuta*)
- Braunton's milk-vetch (*Astragalus brauntonii*)
- Nevin's barberry (*Berberis nevinii*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Slender mariposa lily (*Calochortus clavatus* var. *gracilis*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)
- Santa Susana tarplant (*Deinandra minthornii*)
- Mojave tarplant (*Deinandra mohavensis*)
- Slender-horned spineflower (*Dodecahema leptoceras*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)
- Southern California black walnut (*Juglans californica*)
- Pale-yellow layia *(Layia heterotricha*)
- Ocellated lily (*Lilium humboldtii* ssp. *ocellatum*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)
- Ojai navarretia (*Navarretia ojaiensis*)
- White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)
- Coulter's matilija poppy (*Romneya coulteri*)
- Chaparral ragwort (*Senecio aphanactis*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- San Bernardino aster (*Symphyotrichum defoliatum*)

The five special-status plants that are unlikely to occur within Segment 115 include:

- Southern tarplant (*Centromadia parryi* ssp. *australis*)
- Blochman's dudleya *(Dudleya blochmaniae* ssp. *blochmaniae)*
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- California satintail (*Imperata brevifolia*)
- Gairdner's Yampah (*Perideridia gairdneri* ssp. *gairdneri*)

Direct impacts to special-status plant species may occur in a variety of ways, including the direct removal of plants during the course of construction. Clearing and grading associated with the placement of towers or the grading of access or spur roads may also result in the alteration of soil conditions, including the loss of native seed banks and changes to the topography and drainage of a site such that the capability of the habitat to support special-status species is impaired. Indirect impacts include the creation of conditions that are favorable for the invasion of weedy exotic species that prevent the establishment of desirable vegetation and may adversely affect wildlife. Dust from road travel, grading, or other construction activities may also reduce photosynthetic capacity in plants over time or inhibit reproduction by physically coating reproductive structures or excluding insect pollinators. Soil disturbance may also result in the spread of invasive plant species. Trampling due to foot or vehicular traffic could result in soil compaction if it occurs repeatedly within any specific area; soil compaction may in turn lead to reduced water absorption and increased runoff, potentially contributing to an increase in non-native plant species, which could be more tolerant of these conditions.

The potential introduction or spread of noxious and invasive weeds would occur primarily during construction activities, but would also continue to occur during operation and maintenance phases of the Project. The introduction of noxious and invasive weeds would be related to ground disturbance from clearing and grading, expansion of access roads, construction of spur roads, and road maintenance; the use of vehicles, construction equipment, or earth materials contaminated with non-native plant seed; use of straw bales or wattles that contain seeds of non-native plant species; and enhanced public access to the Project corridor during and after construction. Additionally, weed seeds are often spread on equipment or clothing by construction or maintenance personnel. This would provide many avenues for new propagules (any part of a plant that may generate a new individual plant) to be carried into areas that previously were isolated from sources of noxious weed seeds. Direct impacts associated with the introduction of noxious weeds could occur when noxious weeds become established in an area. These invasive plant species can cause a permanent or long-lasting change to the environment by increasing vegetative cover, creating a dense layer that prevents native vegetation from germinating, altering the edaphic and hydrological conditions through nitrogen fixation (as in Spanish broom), or may drain the water table (as in giant reed). Noxious weeds can create such an unfavorable environment for wildlife that associate, mutualistic species necessary for native plant life cycles, such as seed dispersers, fossorial mammals, or pollinators, are lost from the area. Indirect impacts attributed to the colonization of noxious weeds could include a gradual decrease in natural biodiversity, as noxious weed infestations may extirpate native plant populations.

Operational impacts would also include trampling or crushing due to public use of new or improved spur roads and access roads, increased erosion, and the spread and colonization of noxious weeds. Other operational impacts include removal and trimming of vegetation during maintenance activities. Restoration activities may inadvertently lead to negative effects on special-status plant species, should they be present during construction. For instance, seed collection from native plants may result in the unintentional trampling of smaller listed species should they be present in the area, or in the removal of seeds from listed species. Effective preconstruction flagging of these species would assist in reducing the likelihood of incidental effects during seed collection or even weed removal. Weed removal may also lead to species that are not non-native being unintentionally treated or removed.

General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-24, GP-25, GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat).

TABLE 33. MITIGATION MEASURES APPLICABLE TO SEGMENT 115

Wildlife Species	Mitigation Measures		Vegetation Community/Plant Species	Mitigation Measures
American Badger	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20		Riversidian Sage Scrub	AIR-2a, BIO-1, BIO-2, BIO-4, BIO-6, BIO-13
Burrowing Owl	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-8, BIO-16			
Desert Kit Fox	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20			
Raptors and Other Migratory Birds	HYD-1, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-8, BIO-11			
General Wildlife	BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-8, BIO-11			

TABLE 34. BIOLOGICAL RESOURCES FOUND WITHIN SEGMENT 115 AND POTENTIAL ACREAGE OF DISTURBANCES

	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Avian Assessment Impacts				
Low	27.6	27.6	8.4	11.9
Moderate	0.6	0.6	0.2	0.2
Biological Protected Area				
San Andreas Rift Zone SEA	4.8	4.8	1.6	2.3
Vegetation				
Agricultural Land	13.8	13.8	4.2	6.3
California Annual Grassland	11.6	11.6	3.8	5.2
Riversidian Sage Scrub	2.7	2.7	0.6	0.7

Because Segment 115 has been eliminated from consideration for construction, the data provided in this table for this segment has not been updated and reflects the most recent data before it was eliminated.

7.1.9 Segment G

Segment G is located at its northernmost and southernmost points at N34°43.856’, W118°20.670’ and N34°29.225’, W118°30.846’, respectively. The Segment is approximately 21.2 miles long. Segment G joins Segment B and is situated largely within a mix of chaparral communities and non-native grassland in the northern section off ANF lands. Segment G also crosses or approaches riparian areas potentially occupied by sensitive resident riparian-dependent wildlife including the arroyo toad, red-legged frog, least Bell’s vireo, southwestern willow flycatcher, western yellow-billed cuckoo, Santa Ana sucker, and arroyo chub.

During the 2008 protocol surveys nine of the 13 sites with potential for the arroyo toad are within or near Segment G (Site Assessment #s 3, 4, 5, 7, 10, 12, 13, 14, and 20). One of these sites (Site Assessment #14) is also within one mile of Segment J. Site Assessment #20 is along Segment 2a, which skirts the unincorporated community of Green Valley and goes around Grass Mountain. No arroyo toad life stages were found in 2008 or 2009. During the 2008 protocol surveys, of the 15 sites with the potential for occurrence of the California red-legged frog, 11 occur near Segment G (Site Assessment #s 3, 4, 5, 7, 9, 10, 11, 12, 13, 14, and 19). One of these sites (Site Assessment #14) is also within one mile of Segment J. No California red-legged frog life stages were found in 2009.

The Project's potential impacts to wildlife include habitat loss, disturbance and mortality during construction through crushing. Impacts to riparian habitat occupied by the federally-listed endangered arroyo toad and federally listed threatened red-legged frog would constitute a take under ESA. Additionally, impacts could occur to federally designated critical habitat for the red-legged frog along Segment G between MP 15.6 to 19.7, although this is unlikely due to the separation between Segment G and the boundaries of the critical habitat. Impacts to these listed species would be considered significant due to their protection under ESA and would require formal consultations with USFWS and CDFG as appropriate. However, these potential impacts would be minimized as the Project would include implementation measures to minimize damage to riparian vegetation, wetlands, and surface waters by locating all towers and other structures outside of stream channels by applying the GPs and Mitigation Measures.

Suitable habitat for the riparian bird species (southwestern willow flycatcher, least Bell's vireo, and western yellow-billed cuckoo) is located on along Segment G (POWER 2008a). Impacts to riparian habitat occupied during the breeding season by the endangered least Bell's vireo and southwestern willow flycatcher would constitute a take under ESA, as well as under CESA for the vireo only. Impacts to these listed species would require formal consultations with the federal and state resource agencies. Impacts to the riparian bird species are avoidable by limiting construction within riparian habitats to periods outside the breeding season for riparian dependent species. LADWP would apply the GPs and Mitigation Measures discussed above for riparian communities, wetlands, and water resources which would minimize potential impacts to a level of insignificant for riparian-dependent migratory wildlife species.

In addition, the Mitigation Measures directs LADWP to conduct pre-Project Protocol surveys to determine the presence or absence of sensitive riparian bird species in suitable habitat as determined by the applicable resource agencies, along the selected route. If present, the federal and state lead agencies would consult with USFWS and CDFG to determine any appropriate additional mitigation for the construction and long-term maintenance and operation of the proposed Project.

Wildlife

California Red-legged Frog

Under Segment G, there may be direct or indirect impacts to California red-legged frog, expected to have a possibility of occurrence due to an annually-documented population in the St. Francis Dam reach of San Francisquito Creek, an area which is also designated critical habitat (75 FR 12815 12959) but which will not be crossed by construction equipment on Forest Road 5N27. While the Bee Canyon access road will be used for a creek crossing, multiple protocol surveys in 2008 and 2009 at several locations in San Francisquito Creek between the known population and this potential crossing failed to find any sign of the species. There is also a stretch of apparently perennial water in an oak woodland at Drinkwater Flat that could provide habitat for California red-legged frogs, although none are known to be present. Encroachment into this area is not expected except possibly by foot traffic during the final line-stringing phase. Direct injury or mortality could occur during this process if an individual is present and crushed by foot traffic. However, because California red-legged frogs are not restricted to water and are known to pass over land during migration, there could also be inadvertent crushing by equipment along the access road or in the tower construction areas (Bulger et al. 2003, Rathbun and Scott 2010). Construction of the new 230 kV line could result in indirect adverse impacts to California red-legged frogs. Decreased fertility or inability to breed could occur due to increased stress, unsuitable breeding habitat, or failure to find a mate in new habitat patches. However, California red-legged frogs are not expected to be present or encountered during construction, and the above scenarios are unlikely. Additionally, construction could result in habitat degradation as a result of increased non-native plant species due to plant seeds attaching to vehicle tires or carriages and falling off in streambeds. Dust raised by vehicles or construction of transmission towers or access roads could settle on surrounding vegetation, possibly reducing the effectiveness of individual plants' photosynthetic processes. Habitat degradation may occur after the

Project has been constructed due to ongoing maintenance and security patrols in the future, but it is expected that patrols would likely stay on the main access road unless a problem is discovered that requires individual tower access.

General practices that would reduce short-term and long-term effects to California red-legged frog and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to California red-legged frog and its habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-24 (Protect arroyo toad and California red-legged frog).

Western Spadefoot Toad

Under Segment G, there will be direct or indirect effects to western spadefoot toad, expected to be likely to occur on this segment due to numerous calls tentatively identified as western spadefoot toads during several 2009 surveys in San Francisquito Creek, which were never verified with visual identifications (POWER 2010a). Tower construction and grading of new or existing access roads will destroy or degrade grassland habitat, particularly along City Highline Motorway north of Drinkwater Flat, while excessive disturbance in streambed crossings may degrade habitat or possibly alter hydrology. Direct injury or mortality from crushing by equipment or vehicles may occur should individuals be present on the road or in the construction area, especially if they or their tadpoles are present in intermittent streams or temporary pools that are crossed by construction vehicles. Because anurans are known to be most active at night, any night construction may also result in crushing of any animals that travel across the road.

General practices that would reduce short-term and long-term effects to western spadefoot toad include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to western spadefoot toad include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program).

Least Bell's Vireo, Southwestern Willow Flycatcher, Western Yellow-billed Cuckoo

Under Segment G, there would be direct or indirect effects to least Bell's vireo, southwestern willow flycatcher, and western yellow-billed cuckoo, as they are expected to have a possibility of occurring based on availability of suitable habitat as determined in 2008 surveys (POWER 2009a). Tower construction and grading of new and existing access roads would result in habitat and vegetation loss, as well as possible injury or mortality. Tree trimming is likely in order to allow vehicles and equipment to pass without causing damage to trees by breaking branches; this will result in an unknown amount of habitat loss and possibly injury or mortality of adults or young. Mitigation measure BIO-14 is expected to help reduce the possibility of direct injury or mortality through preconstruction/protocol surveys for birds or nests. Further habitat degradation may occur through the deposition of dust or other contaminants onto leaves, which can reduce their vigor and reduce habitat quality in the area. Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area which may leave them open to predation. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat which could lead to reduced fitness of individuals. Furthermore, because nesting may occur outside of the officially recognized nesting season, if construction approaches any undetected nests with eggs or young, the disturbance may cause the adult(s) to abandon the nest. LADWP will consult with USFWS and implement all reasonable and prudent measures requested to protect these three species.

General practices that would reduce short-term or long-term effects to least Bell's vireo, southwestern willow flycatcher, and western yellow-billed cuckoo and to riparian habitat include GP-3, GP-5, GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to least Bell's vireo, southwestern willow flycatcher, and western yellow-billed cuckoo include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat). Specific measures requested by USFWS to protect these species will also be considered.

Swainson's Hawk and Peregrine Falcon

Under Segment G, there may be direct or indirect effects to Swainson's hawk or peregrine falcon, both expected to have a possibility of occurring on this segment due to available water sources in San Francisquito Creek and Drinkwater Reservoir (when full) and available nesting habitat on the ledges and boulders along the western edge of San Francisquito Canyon. Swainson's hawks were also identified by POWER biologists above Segment G in 2009, but these were deemed to be most likely migrants. There are also nesting opportunities for falcons with the buildings and structures throughout San Francisquito Canyon, such as power plants, residences, and existing transmission lines. Construction of new towers and grading of new or existing access roads would result in vegetation and habitat loss to these species. Direct injury or mortality from construction is not expected based on the lack of recorded sightings, but should any individuals nest near the proposed ROW they may be displaced by construction disturbance depending on the amount of ambient disturbance in the area, which is greater in the central Green Valley portion of the segment than either the northern (Antelope Valley) and southern (Dry Canyon) portions. If this is the case, adults and/or their young would likely need to relocate, which could possibly result in indirect injury or mortality as they move to inhabit new locations. Power line design could result in injury or mortality to raptors that are flying through the area or even perching on the towers, and appropriate tower design and protective measures will need to be enforced to prevent this. Birds, particularly raptors, are also known to perch, roost, or even nest on transmission structures, and may collide with power lines upon landing in or leaving a water body (APLIC 2006).

General practices that would reduce short-term or long-term effects to Swainson's hawk and peregrine falcon include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Swainson's hawk and peregrine falcon include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

California Condor

Under Segment G, there would be direct or indirect impacts to California condor associated with implementation of the proposed action. This species is expected to have a possibility of occurring based on GPS data supplied by USFWS (USFWS 2008b, USFWS 2009d). Tower construction and grading of new or existing access roads will result in habitat and vegetation loss. It is not expected that the amount of vegetation and habitat loss that will occur on this segment will have a significant effect on this species, as immatures have been measured foraging over 140 miles and nesting pairs typically 31 to 44 miles in a single day (USFWS 1996b) and can likely adapt to the relatively minor change. Construction may result in trash or microtrash being left behind by the crews, even with the implementation of mitigation measure BIO-18. Any leftover trash or microtrash has the possibility to be ingested by condors, which in turn would be regurgitated for chicks to feed on, which can lead to mortality of the chicks (USFS 2008). This is a short-term impact that would be addressed by the implementation of BIO-18 and the creation of a Proper Disposal of Construction Waste Plan for the Project. As stated in mitigation measure BIO-6, road kill within the construction area would be reported within 24 hours to the USFS or BLM if on NFS or BLM land, respectively, or to the local animal control center if on non-federal lands.

The construction of the towers and presence of new transmission lines may stress condors or lead to a collision depending on eventual placement and proximity to existing lines, which is anticipated to be resolved through mitigation measure BIO-18. Based on the number of sightings in this area, it is highly unlikely that any California condors are nesting near the proposed ROW (USFWS 2008b, USFWS 2009d). If condors are present in the construction area, then all construction will stop until the condor leaves the area; the biological monitor will document the occurrence and report it to USFWS (and USFS, if applicable).

General practices that would reduce short-term or long-term effects to California condor include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to California condor include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-18 (Protect California condor). Formal consultation is being conducted with the USFWS to determine if any additional protection measures other than those mentioned above are necessary to protect California condors. In addition, any reasonable and prudent measures requested by the USFWS to protect the California condor will be implemented.

Loggerhead Shrike

Under Segment G, there may be direct or indirect effects to loggerhead shrike, expected to have a possibility of occurring due to availability of suitable habitat. Tower construction and grading of new or existing access roads would result in habitat and vegetation loss. This would cause habitat degradation which may make the area less appealing to loggerhead shrike individuals. It is expected that preconstruction surveys and/or biological monitoring will locate any nests within shrubs or trees in the area, although if any nests are not located, this could result in injury or mortality of individuals. Construction noise and human presence may cause birds to disperse from the area, potentially abandoning a nest if any birds are nesting nearby during construction.

General practices that would reduce short-term or long-term effects to loggerhead shrike include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to loggerhead shrike include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness

Program), and BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

California Spotted Owl

Under Segment G, there may be direct or indirect effects to California spotted owl, expected to have a possibility of occurring due to availability of suitable habitat as determined during 2008 and 2009 surveys (POWER 2009b). Habitat degradation and/or loss will occur for this species on this segment, as many of the areas that were determined to be suitable habitat during surveys are directly within the survey corridor. Depending on specific and final tower locations, these may be able to spanned over or avoided. However, they may be impacted by construction if they cannot be avoided, such as by tree trimming where necessary for equipment access. This could, by extension, lead to injury or mortality of any spotted owls that may be present in the affected trees. Habitat loss and/or degradation may also make suitable California spotted owl habitat less attractive for future use by this species, potentially requiring individuals to find and/or utilize new habitat patches. Construction during nesting season may cause owls to leave the area entirely if they become too distressed by the activity, which could in turn lead to harm if owls are pushed into areas that are unfamiliar or unsuitable for them; however, implementation of land management plan standards and mitigation measures should minimize impacts to nesting spotted owls. Implementation of Forest Plan Standard S20 would restrict construction within 0.25 mile of any California spotted owl nest site or activity center with an unknown nesting status during the breeding season (February 1 – August 15) unless USFS protocol surveys determine that spotted owls are absent. This would reduce impacts to nesting California spotted owls and their young. This standard is implemented into mitigation measure BIO-20. Dust will likely be a factor from construction, and will, without proper use of a water truck or equivalent mechanism, have the potential to drift onto adjacent vegetation, degrading its quality.

General practices that would reduce short-term or long-term effects to California spotted owl include GP-8, GP-24, GP-25, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short-term or long-term effects to California spotted owl include AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-20 (Protect California spotted owl).

Pallid Bat, Townsend's Big-eared Bat, Western Mastiff Bat, and Western Red Bat

Under Segment G, there may be direct or indirect construction impacts to pallid bat, Townsend's big-eared bat, western mastiff bat, and western red bat. All four species are expected to be likely to occur based on the availability of suitable habitat on Segment G, such as rocky areas for roosting on the western side of San Francisquito Canyon; water in San Francisquito Canyon, Dry Canyon, and Drinkwater Reservoir; and foraging habitat in the shrubs and grassland throughout the alignment. Tower construction and grading of new or existing access roads would result in loss of foraging habitat and degradation in habitat quality, although tower construction may provide additional roosting habitat for the western mastiff bat. Pallid bats and Townsend's big-eared bats in particular are sensitive to human disturbance, and construction during summer months, when bat activity is higher, may cause a greater degree of disturbance to the bats, potentially leading to their abandonment of the area (Vaughan and O'Shea 1976, Piaggio 2005). This can indirectly lead to injury or mortality if it results in encounters with equipment or in decreased fitness at a new location due to unfamiliarity. The bats would likely return to the same roost the following season, if it were still available (B. Doering personal communication 2011). Mating for pallid bats occurs from October to February, birth from April to July, and final weaning in August; mating in Townsend's big-eared bats generally occurs between October and February, with birth between May and July; mating in western mastiff bats typically begins in early March with birth ending in

September; and mating in western red bats occurs in late summer or early fall with birth the following summer (Reid 2006). Construction during certain time periods of these windows may be more disturbing to some bat species than others, if they are present.

Should a bat roost be disturbed by construction, it may result in complete abandonment of the roost, particularly for more sensitive species like pallid bats or Townsend's big-eared bats. This may lead to complete nesting failure for the season, resulting in a loss of that year's new bat births. Because bats are mainly nocturnal, any night construction would disturb them, disrupting foraging and potentially leading to injuries. Disruption of hibernation is unlikely, given the generally warm winters in Southern California. McNab (1974) suggests that only bats that are both small and do not cluster in groups can hibernate when the environmental temperature is above 14°C (57.2°F). Pallid bats may roost alone or in groups from two to several hundred and, although they will hibernate in cold parts of their range, they overwinter in coastal California (Rambaldini 2005). They have been reported to remain active at temperatures between -5°C (23°F) and 10°C (50°F). Townsend's big-eared bats may hibernate in groups of single individuals to several hundred; in some areas, mainly in the eastern U.S., they may hibernate in groups up to several thousand (Piaggio 2005). Western mastiff bats cluster in groups of 30 to several hundred and do not undergo long periods of hibernation, instead remaining periodically active throughout the winter (Siders 2005). Although winter behavior of western red bats is not well understood, it is possible that they also do not hibernate for long periods, as this species has been reported to be found foraging during the winter on warm days, even in northern California (Bolster 2005). It is likely that bats in the Project area would periodically enter states of torpor but would generally remain relatively active compared to bats in colder parts of the country, where hibernation is more feasible.

General practices that would reduce short-term or long-term effects to special-status bat species include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short-term or long-term effects to special-status bat species include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-21 (Protect sensitive bat species).

Tehachapi Pocket Mouse and San Diego Black-tailed Jackrabbit

Under Segment G, there may be direct or indirect effects to Tehachapi pocket mouse and San Diego black-tailed jackrabbit, both expected to have a possibility of occurring due to availability of suitable habitat. Tower construction and grading of new or existing access roads will result in habitat loss, resulting in a decrease in food availability for these species and possibly an increase in predation risk due to reduced vegetation cover. Preconstruction surveys will identify any possible burrows, but undiscovered burrows may be crushed during construction, resulting in possible injury or death to one or more individuals and a reduction in suitable hiding places. Information about burrow systems utilized by Tehachapi pocket mouse is currently unknown, but displacement of individuals from burrows may lead to injury or mortality due to exposure to predation from raptors or other predators. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any small mammals in the area, which may fall into them. Because black-tailed jackrabbits are usually nocturnal, construction at night would result in foraging disturbance and possibly injury or mortality from equipment (Reid 2006). During the day they sleep in depressions under bushes, and if for any reason one should be caught suddenly and unexpectedly by construction, injury or mortality could again occur (Reid 2006). Although birthing occurs year-round, young are able to run within a couple hours of birth and would be less likely to be harmed or killed by construction than species whose young can take several weeks to become independently mobile (Reid 2006). However, dispersing young during the day could leave them open to increased predation risk.

General practices that would reduce short-term or long-term effects to Tehachapi pocket mouse and San Diego black-tailed jackrabbit include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Tehachapi pocket mouse and San Diego black-tailed jackrabbit include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

American Badger

Under Segment G, there may be direct or indirect construction impacts to American badger, expected to be have a possibility of occurring based on availability of suitable habitat. Tower construction and grading of new or existing access roads will result in habitat and vegetation loss, which may result in a temporary increase in food availability due to reduced cover for rodents and other species that badgers prey upon. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-20, will identify any possible active or inactive American badger burrows, but some burrows may still go unnoticed and may therefore be crushed or damaged by vehicles, heavy equipment, or trampling. This may in turn result in the injury or mortality of one or more badgers should they be present. Badgers may be displaced by construction activity, including noise and vibrations, but because their home ranges can be up to 400 acres for females and up to 600 acres for males it is likely that any displaced individuals would be able to expand outside of the construction zone without a significant impact on their well-being. However, any badgers in the area may be accustomed to human presence, as this area is increasingly populated moving southwest, particularly around the unincorporated communities of Green Valley and Elizabeth Lake.

General practices that would reduce short-term or long-term effects to American badger include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to American badger include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Desert Kit Fox

Under Segment G, there may be direct or indirect construction impacts to desert kit fox, expected to have a possibility of occurring due to availability of suitable habitat. Tower construction and grading of new or existing access roads will result in habitat loss, which may result in a temporary increase in food availability by providing less cover for wildlife that the desert kit fox preys upon. Habitat degradation may also occur as a secondary effect of adjacent habitat loss or general construction access. This could result from the spread of non-native vegetation in the construction or access area or from excessive dust from construction in the desert area, necessitating the implementation of non-native weed prevention and dust control measures. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-20, will identify any possible active or inactive desert kit fox burrows to the extent possible within the agricultural fields, but any unnoticed burrows may be crushed during construction, possibly resulting in injury of mortality of one or more kit foxes that may be present. Nearby kit foxes may be scared away from the area or to other burrows by construction noise or vibrations, but as construction presence will only be temporary, it is expected that this would result in a short-term effect. It is likely that any present kit foxes are used to human presence due to the activity along this segment, but they may still be stressed enough by construction to cause dispersal.

General practices that would reduce short-term or long-term effects to desert kit fox include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to desert kit fox include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Southwestern Pond Turtle

Under Segment G, there may be direct or indirect construction impacts to southwestern pond turtle, expected to be present in San Francisquito Creek due to several years of sightings during surveys conducted by USGS (USGS 2002, USGS 2003, USGS 2007). Areas where this turtle has been identified by biologists, which are the Drinkwater and St. Francis Dam reaches of San Francisquito Creek, are not expected to be affected by construction activity, as construction will be over a ridge in Dry Canyon and will not use San Francisquito Canyon as access through this portion of the segment. Habitat loss should be minimal, according to where sections of habitat are located relative to where the proposed ROW is located. Habitat is present in a perennial oak riparian woodland area of Dry Canyon beginning roughly at the intersection of Forest Roads 5N27 and 6N21; this area is not known to be inhabited by turtles and no turtles or signs of turtles were observed during any 2008 and 2009 amphibian surveys. This area, additionally, can likely be avoided except by foot traffic during the final line-stringing phase of construction. It is possible that turtles may venture into the construction area during their seasonal migrations into or out of wintering habitat. While most southwestern pond turtles typically do not move more than 500 meters upland, they have also been known to move up to 5 km if sufficiently stressed for appropriate habitat conditions (Bettelheim 2005). Segment G is approximately one mile southeast of the previously-documented occupied habitat, but it is probably unlikely that turtles would be able to traverse this distance due to the steep ridge in between San Francisquito Canyon and Dry Canyon, where the proposed ROW is. Should any turtles be present, however, injury or mortality could occur if they were on land or buried for the winter, depending on construction timing. Any turtles that happen to be pushed into the open by construction would also be open to predation.

General practices that would reduce short-term and long-term effects to southwestern pond turtle include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to southwestern pond turtle include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

San Bernardino Ringneck Snake, Coastal Rosy Boa, and Two-striped Garter Snake

Under Segment G, there may be direct or indirect effects to San Bernardino ringneck snake, coastal rosy boa, or two-striped garter snake. San Bernardino ringneck snake is expected to have a possibility to occur based on availability of suitable rocky habitat particularly along the western side of San Francisquito Canyon and aquatic habitat in San Francisquito Creek. Coastal rosy boa is expected to be present due to a sighting of an individual by a POWER biologist in 2009, while two-striped garter snake is expected to be likely to occur based on several perennial water stretches in San Francisquito Canyon and Dry Canyon. Construction of new towers and access roads will result in vegetation and habitat loss, and any movement of rocky areas for construction purposes may destroy additional habitat and refuges. Moving rocks may also result in injury or mortality if any snakes are present in between the rocks or on the ground adjacent to them. Excessive disturbance to washes or streambeds may have additional impacts to habitat, as these snake species are attracted to water sources, particularly two-striped garter snake (Stebbins 2003). Scaring away rodents or herpetofauna could also cause reductions in food supply for any snakes that may be in or near the ROW, while scaring snakes into the open may cause increases in predation. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any snakes in the area that may get trapped in them. Finally, individuals may be unintentionally run over by construction traffic should they be basking on the ground and undetected.

General practices that would reduce short-term or long-term effects to San Bernardino ringneck snake, coastal rosy boa, and two-striped garter snake include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to San Bernardino ringneck snake, coastal rosy boa, and two-striped garter snake include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Coast (San Diego) Horned Lizard

This species is known to be present in the general area. Under Segment G, there would be direct or indirect effects to coast horned lizard, expected to be present due to numerous sightings within San Francisquito Canyon by POWER biologists in 2009. Tower construction and grading of new or existing access roads would result in habitat and vegetation loss, and may result in direct injury or mortality of individuals. Removal of chaparral for the grading of access roads or tower sites would reduce or degrade suitable habitat for this species. Additionally, any coast horned lizards that go undetected by preconstruction surveys—in compliance with mitigation measure BIO-22—and are present under vegetation, on roads, or in burrows, may be crushed by foot traffic, vehicles, or heavy equipment. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any coast horned lizards which may fall into them. It is expected that the risk of falling into an open hole would be greater overnight, as the construction noise and vibrations would be more likely to keep any coast horned lizards from approaching too close to the active site during the day. The construction work may also lead to dispersal of individuals from the area, potentially leading to an increased risk or predation or competition if any animals are forced to relocate to unfamiliar territory.

General practices that would reduce short-term or long-term effects to coast horned lizard include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to coast horned lizard include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Unarmored Threespine Stickleback, Santa Ana Sucker, and Arroyo Chub

Under Segment G, there may be indirect construction impacts to unarmored threespine stickleback, which is not expected to occur along Segment G. While there has been a historic population within San Francisquito Creek, CDFG and USGS determined that the population was extirpated during severe flooding in 2005 (CDFG 2010). However, this determination has not been made by USFS. Tower construction and grading of new and existing access roads may result in habitat loss or degradation depending on streambed impacts. Disturbance or habitat loss within the existing streambed in San Francisquito Creek will upset conditions for unarmored threespine stickleback in the event of any future recolonization attempts, including negative changes to water clarity and quality and potential changes to streambed contours. Should stickleback repopulate San Francisquito Creek in the time period before construction occurs, there may be direct effects through crushing by foot traffic, vehicles, or heavy equipment, as construction will cross the creek at the access road to Bee Canyon. Alternatively, construction vehicles could bypass the creeks at Bee Canyon by entering City Highline Road from Dry Canyon to the south and LADWP's Power Plant 1 to the north. Construction of Segment G may affect the arroyo chub, expected to have a possibility of occurring along Segment G due to a known population that has been observed within the Drinkwater and/or Dam Reaches of San Francisquito Creek for the last decade (USGS 2002, USGS 2003, USGS 2004, USGS 2005a, USGS 2005b, USGS 2007, USGS 2008, USGS 2010, USGS 2011). The ANF Land Management Plan (USFS 2005) considers this species to be present within San Francisquito Creek, although it is unclear if it is believed or known to be present anywhere in San Francisquito Creek upstream of Forest Road 5N27. Direct impacts to arroyo chub could include crushing or disruption of life history during construction by vehicles or equipment in stream crossings at Bee Canyon, should it be present, along with habitat degradation. Project equipment and vehicles could spill vehicular fluids into the water or could carry non-native plant seeds in their tires or on their carriages, potentially resulting in the spread of non-native plant species if the seeds fall off and propagate in new areas, such as suitable arroyo chub habitat. Repeated stream crossings may also disrupt or destroy suitable breeding or spawning habitat. Construction effects are not expected to Santa Ana sucker, expected to be unlikely to occur in the Project area. While this species has been documented several miles downstream at the Drinkwater Reach of San Francisquito Creek, the stretch of creek between Bee Canyon and this known population is intermittent and has been observed to be dry most of the year. It should be noted that Project surveys for arroyo toad and California red-legged frog throughout this stretch of the creek failed to observe any incidental sign of either Santa Ana sucker or arroyo chub despite several survey points visited multiple times during each wet season.

General practices that would reduce short-term or long-term effects to unarmored threespine stickleback, Santa Ana sucker, and arroyo chub or its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to unarmored threespine stickleback, Santa Ana sucker, and arroyo chub include HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activites and vehicle operation ould be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program).

Mule Deer

For a discussion of potential impacts to the mule deer as a result of construction on Segment G, please refer to the Management Indicator Species report.

Mountain Lion

For a discussion of potential impacts to the mountain lion as a result of construction on Segment G, please refer to the Management Indicator Species report.

Song Sparrow

For a discussion of potential impacts to the song sparrow as a result of construction on Segment G, please refer to the Management Indicator Species report.

Avian Risk

Segment G poses a low, moderate, and high risk to avian species depending on specific sections of the segment, according to the Avian Risk Assessment. Seventeen miles present a low risk, four miles present a moderate risk, and one mile is a high risk. All risk factors except three—new transmission corridor, the transmission line crossing a reservoir or lake, and a water body with established emergent vegetation within 0.5 mile—are applicable to this segment over at least one mile. These include; the line crossing a recorded wetland; a wetland being within 0.5 mile of the transmission line; a reservoir or lake within 0.5 mile of the transmission line; the line crossing through two separate habitat usage types; the line crossing a valley or canyon perpendicularly; the line crossing perpendicular to prevailing winds; the line crossing through an area with wind speeds on average greater than 16.8 mph; a line convergence or divergence within 0.5 mile of the transmission line; a 40+% slope within 0.5 mile of the transmission line; a nearby ridgeline; a ridge crossing perpendicular to the line; and a valley nearby to the line. Wetlands, reservoirs, and lakes tend to create congregations of birds that can collide with lines during landing or takeoff, while lines that cross through different habitat types (such as agriculture and wetland) pose risks to birds which may be crossing between habitats. Lines crossing perpendicular to valleys or canyons pose risks to avian species because birds often fly through valley or canyons. Also, winds that are prevailingly perpendicular to transmission lines can blow birds into the lines, while higher wind speeds are believed to result in lower numbers of avian migrants. Converging and diverging transmission lines can increase collision risk by causing birds to perform multiple evasive maneuvers. Lines placed near steep slopes are risky because birds such as California condors and peregrine falcons nest on slopes and cliff faces, which will likely increase the risk of collision when coming or going from the nest. Crossing near or perpendicular to ridgelines is a risk factor because raptors use thermal updrafts to soar near ridges, and may collide with transmission lines if they are flying too close. Potential effects as a result of these factors include collision and electrocution of birds at transmission lines. GP-8 and GP-11 would protect local and migratory bird species that may occur and reduce short-term and long-term effects to migratory bird species in the BRRTP area, respectively, while applicable mitigation measures include BIO-3 (Incorporate riparian area avoidance and permit measures) and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Other Wildlife

Common species which may occur under Segment G include species such as side-blotched lizard, Pacific tree frog, California tree frog, western toad, coyote, bobcat (*Lynx rufus*), and various unknown migratory bird species. Construction on Segment G may result in injury, mortality, or displacement of any of these species due to crushing or collision during grading of access roads or tower sites; loss of habitat or reduction in food availability during construction; and disturbance from construction noise and vibration leading to dispersal.

Vegetation Communities

The vegetation types observed within the proposed Segment G include:

- Agricultural Land
- California Annual Grassland
- Riversidian Sage Scrub
- Chamise Chaparral
- Disturbed/Developed
- Southern Mixed Chaparral
- Southern Coast Live Oak Riparian Forest
- Southern Riparian Scrub
- Southern Sycamore Alder Riparian Woodland

Suitable habitat for these species may occur within all the vegetation communities listed above, including chaparral and Riversidian sage scrub vegetation. See Table 7 and species accounts for more information.

All of these were searched for during 2008 and 2009 protocol-level surveys on ANF lands at a time of year when they are identifiable in the field, and individuals of slender mariposa lily, club-haired mariposa lily, Pearson's morning-glory and short-joint beavertail were the only special-status plants found within the Segment.

Invasive weeds found on the Segment G access roads and corridor and sections added after the 2008 botanical surveys include:

- Blessed milkthistle (*Silybum marianum*)
- Blessed thistle (*Cnicus benedictus*)
- Cheatgrass (*Bromus tectorum*)
- Horehound (*Marrubium vulgare*)
- Indian hedgemustard (*Sisymbrium orientale*)
- Prickly Russian thistle (*Salsola tragus*)
- Rock rose (*Cistus creticus*)
- Rock rose (*Cistus ladanifer*)
- Rock rose (*Cistus sp.*)
- Saltcedar (*Tamarix ramosissima*)
- Smilograss (*Piptatherum miliaceum*)
- Spanish broom (*Spartium junceum*)
- Tall tumblemustard (*Sisymbrium altissimum*)
- Tocalote (*Centaurea melitensis*)
- Tree tobacco (*Nicotiana glauca*)

Two special-status plant species are known to be present within Segment G and include:

- Slender mariposa lily (*Calochortus clavatus* var. *gracilis)*
- Short-joint beavertail *(Opuntia basilaris* var. *brachyclada)*

The 25 special-status plant species that are likely to occur within Segment G include:

- Nevin's barberry (*Berberis nevinii*)
- Round-leaved filaree (*California macrophylla*)
- Palmer's mariposa lily (*Calochortus palmeri* var. *palmeri*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Alkali mariposa lily (*Calochortus striatus*)
- Peirson's morning glory (*Calystegia peirsonii*)
- Southern tarplant (*Centromadia parryi* ssp. *australis*)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)
- Santa Susana tarplant (*Deinandra minthornii*)
- Mojave tarplant (*Deinandra mohavensis*)
- Slender-horned spineflower (*Dodecahema leptoceras*)
- Blochman's dudleya *(Dudleya blochmaniae* ssp. *blochmaniae)*
- Many-stemmed dudleya (*Dudleya multicaulis*)
- San Gabriel bedstraw (*Galium grande*)
- Delicate bluecup (*Githopsis tenella*)
- Pale-yellow layia *(Layia heterotricha*)
- Ross's pitcher sage (*Lepechinia rossii*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Ojai navarretia (*Navarretia ojaiensis*)
- White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)
- Coulter's matilija poppy (*Romneya coulteri*)

- Chaparral ragwort (*Senecio aphanactis*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- San Bernardino aster (*Symphyotrichum defoliatum*)
- Greata's aster (*Symphyotrichum greatae*)

The 19 special-status plants that could possibly occur within Segment G include:

- California androsace (*Androsace elongata* ssp. *acuta*)
- Kusche's sandwort (*Arenaria macradenia* var. *kuschei*)
- Braunton's milk-vetch (*Astragalus brauntonii*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*)
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- Tehachapi buckwheat (*Eriogonum callistum*)
- Kern buckwheat (*Eriogonum kennedyi* var. *pinicola*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)
- California satintail (*Imperata brevifolia*)
- Southern California black walnut (*Juglans californica*)
- Ocellated lily (*Lilium humboldtii* ssp. *ocellatum*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)
- Rock Creek broomrape (*Orobanche valida* ssp. *valida*)
- Parish's checkerbloom (*Sidalcea hickmanii* ssp. *parishii*)
- Laguna Mountains jewel flower (*Streptanthus bernardinus*)
- Southern jewel flower (*Streptanthus campestris*)
- Lemmon's syntrichopappus (*Syntrichopappus lemmonii*)

The seven special-status plants that are unlikely to occur within Segment G include:

- San Gabriel manzanita *(Arctostaphylos gabrielensis)*
- San Gabriel River dudleya (*Dudleya cymosa* ssp. *crebrifolia*)
- Fragrant pitcher sage (*Lepechinia fragrans*)
- Baja navarretia (*Navarretia peninsularis*)
- Gairdner's Yampah (*Perideridia gairdneri* ssp. *gairdneri*)
- Rock monardella (*Monardella viridis* ssp. *saxicola*)
- Southern Mountains skullcap (*Scutellaria bolanderi* ssp. *austromontana*)

Slender mariposa lily was mapped in 38 locations on Segment G in 2008 and 2009 (See Appendix B). Surveys found an estimated 4,081 individuals. This species was found on all aspects except west-facing slopes, and primarily in burned chamise chaparral; they were also found on the edge of non-native grassland.

Thirty-five points were mapped on Segment G for short-joint beavertail. Each point represents one to nine individuals, for a total of 74 individuals. Some of these short-joint beavertail species might be hybrids with beavertail cactus (*Opuntia basilaris* var. *basilaris*). This variety was located on all aspects and in burned and unburned chamise chaparral, buckwheat scrub, and at the edge of the non-native grasslands.

Direct impacts to special-status plant species may occur in a variety of ways, including the direct removal of plants during the course of construction. In April 2009, LADWP conducted unauthorized road grading along approximately five miles of City Highline Motorway Fire Road, which provides access along much of Segment G. A byproduct of the grading was that the overall width of the road along this section was increased. While areas used for access within this five-mile portion of the road are not expected to require any road widening for construction access, access and spur roads outside of this area may require widening. This will potentially remove habitat that is suitable for one or more of these species or remove individuals that are undetected during preconstruction surveys. Clearing and grading associated with the placement of towers or the grading of access or spur roads may also result in the alteration of soil conditions, including the loss of native seed banks and changes to the topography and drainage of a site such that the capability of the habitat to support special-status species is impaired. Indirect impacts include the creation of conditions that are favorable for the invasion of weedy exotic species that prevent the establishment of desirable vegetation and may adversely affect wildlife. Construction on steep hillsides may also result in off-site sediment transport that may bury rare plants in adjacent habitat or alter soil conditions. Dust from road travel, grading, or other construction activities may also reduce photosynthetic capacity in plants over time or inhibit reproduction by physically coating reproductive structures or excluding insect pollinators. Soil disturbance may also result in the spread of invasive plant species. Trampling due to foot or vehicular traffic could result in soil compaction if it occurs repeatedly within any specific area; soil compaction may in turn lead to reduced water absorption and increased runoff, potentially contributing to an increase in non-native plant species, which could be more tolerant of these conditions.

The potential introduction or spread of noxious and invasive weeds would occur primarily during construction activities, but would also continue to occur during operation and maintenance phases of the Project. The introduction of noxious and invasive weeds would be related to ground disturbance from clearing and grading, expansion of access roads, construction of spur roads, and road maintenance; the use of vehicles, construction equipment, or earth materials contaminated with non-native plant seed; use of straw bales or wattles that contain seeds of non-native plant species; and enhanced public access to the Project corridor during and after construction. Additionally, weed seeds are often spread on equipment or clothing by construction or maintenance personnel. This would provide many avenues for new propagules (any part of a plant that may generate a new individual plant) to be carried into areas that previously were isolated from sources of noxious weed seeds. Direct impacts associated with the introduction of noxious weeds could occur when noxious weeds become established in an area. These invasive plant species can cause a permanent or long-lasting change to the environment by increasing vegetative cover, creating a dense layer that prevents native vegetation from germinating, altering the edaphic and hydrological conditions through nitrogen fixation (as in Spanish broom), or may drain the water table (as in giant reed). Noxious weeds can create such an unfavorable environment for wildlife that associate, mutualistic species necessary for native plant life cycles, such as seed dispersers, fossorial mammals, or pollinators, are lost from the area. Indirect impacts attributed to the colonization of noxious weeds could include a gradual decrease in natural biodiversity, as noxious weed infestations may extirpate native plant populations.

Operational impacts would also include trampling or crushing due to public use of new or improved spur roads and access roads, increased erosion, and the spread and colonization of noxious weeds. Other operational impacts include removal and trimming of vegetation during maintenance activities. Restoration activities may inadvertently lead to negative effects on special-status plant species, should they be present during construction. For instance, seed collection from native plants may result in the unintentional trampling of smaller listed species should they be present in the area, or in the removal of seeds from listed species. Effective preconstruction flagging of these species would assist in reducing the likelihood of incidental effects during seed collection or even weed removal. Weed removal may also lead to species that are not non-native being unintentionally treated or removed.

General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-24, GP-25, GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6

(Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat).

TABLE 35. MITIGATION MEASURES APPLICABLE TO SEGMENT G

Wildlife Species	Mitigation Measures	Vegetation Community /Plant Species	Mitigation Measures
California Red-legged Frog	AIR-2a, HYD-1, HYD-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-24	Riversidian Sage Scrub	AIR-2a, BIO-1, BIO-2, BIO-4, BIO-6, BIO-13
Western Spadefoot Toad	AIR-2a, HYD-1, HYD-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6	Chamise Chaparral	AIR-2a, BIO-1, BIO-2, BIO-13
Least Bell's Vireo, Southwestern Willow Flycatcher, Western Yellow-billed Cuckoo	AIR-2a, HYD-1, HYD-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-8, BIO-11, BIO-14	Southern Mixed Chaparral	AIR-2a, BIO-1, BIO-2, BIO-13
California Condor	HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-7, BIO-11,BIO-18	Southern Coast Live Oak Riparian Forest	AIR-2a, BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-13
California Spotted Owl	AIR-2a, BIO-1, BIO-2, BIO-5, BIO-6, BIO-8, BIO-11, BIO-20	Southern Riparian Scrub	AIR-2a, BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-13
Pallid Bat, Townsend's Big-eared Bat, Western Mastiff Bat, and Western Red Bat	HYD-1, BIO-1, BIO-2, BIO-4, BIO-5, BIO-6, BIO-21	Southern Sycamore Alder Riparian Woodland	AIR-2a, BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-13
Tehachapi Pocket Mouse and San Diego Black-tailed Jackrabbit	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20	Special-status Plant Species	AIR-2a, BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-13
American Badger	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-6, BIO-6, BIO-20		
Desert Kit Fox	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20		
Southwestern Pond Turtle	AIR-2a, HYD-1, HYD-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-22		
San Bernardino Ringneck Snake, Coastal Rosy Boa, and Two-striped Garter Snake	AIR-2a, HYD-1, HYD-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-22		
Coast (San Diego) Horned Lizard	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-22		
Unarmored Threespine Stickleback, Santa Ana Sucker, and Arroyo Chub	HYD-1, HYD-2, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6		
Raptors and Other Migratory Birds	HYD-1, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-8, BIO-11		
General Wildlife	BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-8, BIO-11		

TABLE 36. BIOLOGICAL RESOURCES FOUND WITHIN SEGMENT G AND POTENTIAL ACREAGE OF DISTURBANCE

	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
USFS GIS Modeled Habitat				
Arroyo Toad	20.4	20.4	6.3	8.1
California Spotted Owl	14.6	14.6	3.4	4.1
California Red-Legged Frog	17.5	17.5	5.4	6.9
Unarmored Threespine Stickleback	4.7	4.7	1.4	1.8
Wildlife Range				
Desert Tortoise	16.4	16.4	2.2	2.2
Riparian Conservation Area				
Yes	31.0	31.0	9.2	11.7
Avian Assessment Impacts				
Low	73.0	73.0	19.4	24.1
Moderate	44.4	44.4	11.0	13.4
High	7.0	7.0	2.2	2.8
Known Special Status Plant Species				
Short-joint Beavertail	11.1	11.1	3.4	4.4
Slender Mariposa Lily	6.4	6.4	2.0	2.5
Known Weed Species				
Blessed Thistle	2.9	2.9	0.7	0.9
Smilograss	3.5	3.5	0.9	1.1
Prickly Russian Thistle	2.9	2.9	0.9	1.2
Cistus sp.	0.6	0.6	0.1	0.1
Tocalote	2.9	2.9	0.9	1.2
Indian Hedgemustard	7.6	7.6	2.3	3.0
Tree Tobacco	1.2	1.2	0.4	0.5
Blessed Milkthistle	0.6	0.6	0.2	0.2
Saltcedar	0.6	0.6	0.2	0.2
Riparian Community				
Southern Coast Live Oak Riparian Forest	3.0	3.4	0.6	0.7
Southern Riparian Scrub	0.7	0.7	0.2	0.3
Southern Sycamore Alder Riparian Woodland	2.3	2.3	0.5	0.9
Biological Protected Area				
San Andreas Rift Zone SEA	11.7	11.7	3.1	3.9
Santa Clara River SEA	2.9	2.9	0.9	1.2
Vegetation				
Agricultural Land	24.8	24.8	4.0	4.5
California Annual Grassland	11.2	11.2	2.2	3.6
Chamise Chaparral	38.6	39.4	6.9	10.1
Disturbed/Developed	35.4	35.4	6.6	10.3
Riversidian Sage Scrub	10.1	10.1	1.7	2.4
Southern Mixed Chaparral	13.0	13.0	2.9	5.1

7.1.10 Segment H1

Habitat composition in the survey corridor is roughly 50% agricultural land and 50% non-native grassland.

Wildlife

American Badger

Under Segment H1, there may be direct or indirect construction impacts to American badger, expected to be have a possibility of occurring based on availability of suitable habitat. Tower construction and grading of new or existing access roads will result in habitat and vegetation loss, which may result in a temporary increase in food availability due to reduced cover for rodents and other species that badgers prey upon. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-20, will identify any possible active or inactive American badger burrows, but some burrows may still go unnoticed and may therefore be crushed or damaged by vehicles, heavy equipment, or trampling. This may in turn result in the injury or mortality of one or more badgers should they be present. Badgers may be displaced by construction activity, including noise and vibrations, but because their home ranges can be up to 400 acres for females and up to 600 acres for males it is likely that any displaced individuals would be able to expand outside of the construction zone without a significant impact on their well-being. However, any badgers in the area may be accustomed to human presence, as this area is increasingly populated moving southwest along Bouquet Canyon Road and near Leona Valley.

General practices that would reduce short-term or long-term effects to American badger include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to American badger include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Desert Kit Fox

Under Segment H1, there may be direct or indirect construction impacts to desert kit fox, expected to have a possibility of occurring due to availability of suitable habitat. Tower construction and grading of new or existing access roads will result in habitat loss, which may result in a temporary increase in food availability by providing less cover for wildlife that the desert kit fox preys upon. Habitat degradation may also occur as a secondary effect of adjacent habitat loss or general construction access. This could result from the spread of non-native vegetation in the construction or access area or from excessive dust from construction in the desert area, necessitating the implementation of non-native weed prevention and dust control measures. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-20, will identify any possible active or inactive desert kit fox burrows to the extent possible within the agricultural fields, but any unnoticed burrows may be crushed during construction, possibly resulting in injury of mortality of one or more kit foxes that may be present. Nearby kit foxes may be scared away from the area or to other burrows by construction noise or vibrations, but as construction presence will only be temporary, it is expected that this would result in a short-term effect. It is likely that any present kit foxes are used to human presence due to the activity along this segment, but they may still be stressed enough by construction to cause dispersal.

General practices that would reduce short-term or long-term effects to desert kit fox include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to desert kit fox include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Avian Risk

Segment H1 poses a low risk to avian species, according to the Avian Risk Assessment. It is in an area where wind speeds are on average greater than 16.8 mph, and its upper section is near line convergences or divergences at the Antelope Substation. The lower part of this segment crosses the California Aqueduct. Wetlands, reservoirs, and lakes tend to create congregations of birds that can collide with lines during landing or takeoff, while higher wind speeds are believed to result in lower numbers of avian migrants, and converging and diverging transmission lines can increase collision risk by causing birds to perform multiple evasive maneuvers. Potential effects as a result of these factors include collision and electrocution of birds at transmission lines. GP-8 and GP-11 would protect local and migratory bird species that may occur and reduce short-term and long-term effects to migratory bird species in the BRRTP area, respectively, while applicable mitigation measures include BIO-3 (Incorporate riparian area avoidance and permit measures) and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Other Wildlife

While there are no reported occurrences of special-status species along Segment H1, certain common species may still occur. Common species which may occur along Segment H1 include species such as coyote, western whiptail, white-tailed antelope ground squirrel, desert cottontail, and various unknown migratory bird species. Construction on Segment H1 may result in injury, mortality, or displacement of any of these species due to crushing or collision during grading of access roads or tower sites; loss of habitat or reduction in food availability during construction; and disturbance from construction noise and vibration leading to dispersal.

Vegetation Communities

The vegetation types observed within the proposed Segment H1include:

- California Annual Grassland
- Riversidian Sage Scrub

The one special-status plant species that is known to be present on Segment H1 is:

- Peirson's morning-glory (*Calystegia peirsonii*)

The 15 special-status plant species that are likely to occur within Segment H1 include:

- Nevin's barberry (*Berberis nevinii*)
- Round-leaved filaree (*California macrophylla*)
- Slender mariposa lily (*Calochortus clavatus* var. *gracilis*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Alkali mariposa lily (*Calochortus striatus*)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)
- Slender-horned spineflower (*Dodecahema leptoceras*)
- San Gabriel bedstraw (*Galium grande*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Pale-yellow layia *(Layia heterotricha*)
- Ross's pitcher sage (*Lepechinia rossii*)
- Short-joint beavertail (*Opuntia basilaris* var. *brachyclada*)
- Chaparral ragwort (*Senecio aphanactis*)
- Greata's aster (*Symphyotrichum greatae*)

The 36 special-status plants that could possibly occur within Segment H1 include:

- California androsace (*Androsace elongata* ssp. *acuta*)
- Kusche's sandwort (*Arenaria macradenia* var. *kuschei*)
- Braunton's milk-vetch (*Astragalus brauntonii*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Palmer's mariposa lily (*Calochortus palmeri* var. *palmeri*)
- Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*)
- Southern tarplant (*Centromadia parryi* ssp. *australis*)
- Santa Susana tarplant (*Deinandra minthornii*)
- Mojave tarplant (*Deinandra mohavensis*)
- Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*)
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Tehachapi buckwheat (*Eriogonum callistum*)
- Kern buckwheat (*Eriogonum kennedyi* var. *pinicola*)
- Delicate bluecup (*Githopsis tenella*)
- Urn-flowered alumroot (*Heuchera elegans*)
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)
- California satintail (*Imperata brevifolia*)
- Southern California black walnut (*Juglans californica*)
- Fragrant pitcher sage (*Lepechinia fragrans*)
- Madera leptosiphon (*Leptosiphon serrulatus*)
- Ocellated lily (*Lilium humboldtii* ssp. *ocellatum*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Calico monkeyflower (*Mimulus pictus*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)
- Ojai navarretia (*Navarretia ojaiensis*)
- Rock Creek broomrape (*Orobanche valida* ssp. *valida*)
- Gairdner's yampah (*Perideridia gairdneri* ssp. *gairdneri*)
- White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)
- Coulter's matilija poppy (*Romneya coulteri*)
- Parish's checkerbloom (*Sidalcea hickmanii ssp. parishii*)
- Laguna Mountains jewelflower (*Streptanthus bernardinus*)
- Southern jewelflower (*Streptanthus campestris*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- San Bernardino aster (*Symphyotrichum defoliatum*)
- Lemmon's syntrichopappus (*Syntrichopappus lemmonii*)

The five special-status plants that are unlikely to occur within Segment H1 include:

- San Gabriel Manzanita (*Arctostaphylos gabrielensis*)
- San Gabriel River dudleya (*Dudleya cymosa* ssp. *crebrifolia*)
- Rock monardella (*Monardella viridis* var. *saxicola*)
- Baja navarretia (*Navarretia peninsularis*)
- Southern Mountains skullcap (*Scutellaria bolanderi ssp. austromontana*)

Direct impacts to special-status plant species may occur in a variety of ways, including the direct removal of plants during the course of construction. Clearing and grading associated with the placement of towers or the grading of access or spur roads may also result in the alteration of soil conditions, including the loss of native seed banks and changes to the topography and drainage of a site such that the capability of the habitat to support special-status species is impaired. Indirect impacts include the creation of conditions that are favorable for the invasion of weedy exotic species that prevent the establishment of desirable vegetation and may adversely affect wildlife. Construction on steep hillsides may also result in off-site sediment transport that may bury rare plants in adjacent habitat or alter soil conditions. Dust from road travel, grading, or other construction activities may also reduce photosynthetic capacity in plants over time or inhibit reproduction by physically coating reproductive structures or excluding insect pollinators. Soil disturbance may also result in the spread of invasive plant species. Trampling due to foot or vehicular traffic could result in soil compaction if it occurs repeatedly within any specific area; soil compaction may in turn lead to reduced water absorption and increased runoff, potentially contributing to an increase in non-native plant species, which could be more tolerant of these conditions.

The potential introduction or spread of noxious and invasive weeds would occur primarily during construction activities, but would also continue to occur during operation and maintenance phases of the Project. The introduction of noxious and invasive weeds would be related to ground disturbance from clearing and grading, expansion of access roads, construction of spur roads, and road maintenance; the use of vehicles, construction equipment, or earth materials contaminated with non-native plant seed; use of straw bales or wattles that contain seeds of non-native plant species; and enhanced public access to the Project corridor during and after construction. Additionally, weed seeds are often spread on equipment or clothing by construction or maintenance personnel. This would provide many avenues for new propagules (any part of a plant that may generate a new individual plant) to be carried into areas that previously were isolated from sources of noxious weed seeds. Direct impacts associated with the introduction of noxious weeds could occur when noxious weeds become established in an area. These invasive plant species can cause a permanent or long-lasting change to the environment by increasing vegetative cover, creating a dense layer that prevents native vegetation from germinating, altering the edaphic and hydrological conditions through nitrogen fixation (as in Spanish broom), or may drain the water table (as in giant reed). Noxious weeds can create such an unfavorable environment for wildlife that associate, mutualistic species necessary for native plant life cycles, such as seed dispersers, fossorial mammals, or pollinators, are lost from the area. Indirect impacts attributed to the colonization of noxious weeds could include a gradual decrease in natural biodiversity, as noxious weed infestations may extirpate native plant populations.

Operational impacts would also include trampling or crushing due to public use of new or improved spur roads and access roads, increased erosion, and the spread and colonization of noxious weeds. Other operational impacts include removal and trimming of vegetation during maintenance activities. Restoration activities may inadvertently lead to negative effects on special-status plant species, should they be present during construction. For instance, seed collection from native plants may result in the unintentional trampling of smaller listed species should they be present in the area, or in the removal of seeds from listed species. Effective preconstruction flagging of these species would assist in reducing the likelihood of incidental effects during seed collection or even weed removal. Weed removal may also lead to species that are not non-native being unintentionally treated or removed.

General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-24, GP-25, GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat).

Table 37. Mitigation Measures Applicable to Segment H1

Wildlife Species	Mitigation Measures		Vegetation Community/ Plant Species	Mitigation Measures

American Badger	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20		Riversidian Sage Scrub	AIR-2a, BIO-1, BIO-2, BIO-4, BIO-6 BIO-13
Desert Kit Fox	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20			
Raptors and Other Migratory Birds	HYD-1, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-8, BIO-11			
General Wildlife	AIR-2a, BIO-1, BIO-3, BIO-4, BIO-5, BIO-8, BIO-11			

TABLE 38. BIOLOGICAL RESOURCES FOUND WITHIN SEGMENT H1 AND POTENTIAL ACREAGE OF DISTURBANCE

	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Wildlife Range				
Desert Tortoise	5.8	5.8	2.1	3.7
Avian Assessment Impacts				
Low	15.2	15.2	4.8	7.5
Moderate	1.2	1.2	0.3	0.3
Biological Protected Area				
San Andreas Rift Zone SEA	3.5	3.5	1.1	1.4
Vegetation				
California Annual Grassland	15.4	15.4	4.8	7.5
Riversidian Sage Scrub	1.0	1.0	0.3	0.4

Because Segment H1 has been eliminated from consideration for construction, the data provided in this table for this segment has not been updated and reflects the most recent data before it was eliminated.

7.1.11 Segment H2

Wildlife

Western Spadefoot Toad

Under Segment H2, there may be direct or indirect effects to western spadefoot toad, expected to be likely to occur on this segment due to numerous sightings within five miles of this segment and appropriate habitat located in Haskell Canyon (CDFG 2010). Tower construction and grading of new or existing access roads will destroy or degrade grassland habitat that may be utilized by this species. In the areas where suitable habitat may be present along this segment, the topographical location of the transmission line minimizes and possibly completely avoids direct streambed crossings. Direct injury or mortality from crushing by equipment or vehicles may occur should individuals be present on the road or in the construction area.

General practices that would reduce short-term and long-term effects to western spadefoot toad include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to western spadefoot toad include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program).

Least Bell's Vireo, Southwestern Willow Flycatcher, Western Yellow-billed Cuckoo

Under Segment H2, there would be direct or indirect effects to least Bell's vireo, southwestern willow flycatcher, and western yellow-billed cuckoo, as they are expected to have a possibility of occurring based on availability of suitable habitat as determined in 2008 surveys (POWER 2009a). Tower construction and grading of new and existing access roads would result in habitat and vegetation loss, as well as possible injury or mortality. Because tree trimming is a possibility to allow vehicles and equipment to pass without causing damage to trees by breaking branches, this will result in an unknown amount of habitat loss and possibly injury or mortality of adults or young. Mitigation measure BIO-14 is expected to help reduce the possibility of direct injury or mortality through preconstruction/protocol surveys for birds or nests. Further habitat degradation may occur through the deposition of dust or other contaminants onto leaves, which can reduce their vigor and reduce habitat quality in the area. Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area which may leave them open to predation. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat which could lead to reduced fitness of individuals. Furthermore, because nesting may occur outside of the official agreed-upon nesting season, if construction approaches any undetected nests with eggs or young, the disturbance may cause the adult(s) to abandon the nest. LADWP will consult with USFWS and implement all reasonable and prudent measures requested to protect these three species.

In addition to any measures requested by USFWS, general practices that would reduce short-term or long-term effects to least Bell's vireo, southwestern willow flycatcher, and western yellow-billed cuckoo and to riparian habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to least Bell's vireo, southwestern willow flycatcher, and western yellow-billed cuckoo include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat). Specific measures requested by USFWS to protect these species will also be considered.

Swainson's Hawk, Peregrine Falcon, and Bald Eagle

Under Segment H2, there may be direct or indirect effects to Swainson's hawk, peregrine falcon, and bald eagle. Swainson's hawk is expected to have a possibility to occur based on availability of suitable grassland and shrub habitat in the segment's northern end, along with water sources at Bouquet Reservoir and the California Aqueduct. Peregrine falcon is expected to have a possibility of occurring on this segment due to the abundant open water at Bouquet Reservoir. There are also nesting opportunities for falcons with the buildings and structures around Bouquet Canyon, including the newly-constructed Antelope-Pardee 500 kV transmission line. Bald eagles are expected to be likely to occur on this segment due to the open water at Bouquet Reservoir, the coniferous trees for nesting around the reservoir, and unconfirmed reports from LADWP of bald eagles occurring around Bouquet Reservoir. Construction of new towers and grading of new or existing access roads would result in vegetation and foraging habitat loss to these species. Direct injury or mortality from construction is not expected based on the lack of recorded sightings of these species. Should any of them nest near the proposed ROW they may be displaced by construction disturbance depending on the amount of ambient disturbance in the area, which is generally moderate through Bouquet Canyon due to commuters and residents. If this is the case, adults and/or their young would likely need to relocate, which could possibly result in indirect injury or mortality as they move to inhabit new locations. Power line design could result in injury or mortality to raptors that are flying through the area or even perching on the towers, and appropriate tower design and protective measures will need to be enforced to prevent this. Birds, particularly raptors, are also known to perch, roost, or even nest on transmission structures, and may collide with power lines upon landing in or leaving a water body (APLIC 2006).

General practices that would reduce short-term or long-term effects to Swainson's hawk, peregrine falcon, and bald eagle include include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Swainson's hawk and peregrine falcon and bald eagle include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-17 (Protect the bald eagle and golden eagle).

California Condor

Under Segment H2, there may be direct or indirect impacts to California condor associated with implementation of the proposed action. This species is expected to have a possibility of occurring based on GPS data supplied by USFWS (USFWS 2008b, USFWS 2009d). Tower construction and grading of new or existing access roads will result in habitat and vegetation loss. It is not expected that the amount of vegetation and habitat loss that will occur on this segment will have a significant effect on this species, as immatures have been measured foraging over 140 miles and nesting pairs typically 31 to 44 miles in a single day (USFWS 1996b) and can likely adapt to the relatively minor change. Construction may result in trash or microtrash being left behind by the crews, even with the implementation of mitigation measure BIO-18, Protect California Condor. Any leftover trash or microtrash has the possibility to be ingested by condors, which in turn would be regurgitated for chicks to feed on, which can lead to mortality of the chicks (USFS 2008). The construction of the towers and presence of new transmission lines may stress condors or lead to a collision depending on eventual placement and proximity to existing lines, which is anticipated to be resolved through mitigation measure BIO-18. Based on the number of sightings in this area, it is highly unlikely that any California condors are nesting near the proposed ROW (USFWS 2008b, USFWS 2009d). If condors are present in the construction area, then all construction will stop until the condor leaves the area; the biological monitor will document the occurrence and report it to USFWS (and USFS if applicable).

General practices that would reduce short-term or long-term effects to California condor include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to California condor include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-18 (Protect California condor). Formal consultation is being conducted with the USFWS to determine if any additional protection measures other than those mentioned above are necessary to protect California condors. In addition, any reasonable and prudent measures requested by the USFWS to protect the California condor will be implemented.

Pallid Bat, Townsend's Big-eared Bat, Western Mastiff Bat, and Western Red Bat

Under Segment H2, there may be direct or indirect construction impacts to pallid bat, Townsend's big-eared bat, western mastiff bat, and western red bat. The first three species are expected to have a possibility to occur based on the availability of suitable shrubby, grassy, and riparian habitat in Bouquet Canyon, along with potential roosting habitat in the existing buildings and residences in the canyon and the newly-constructed Antelope-Pardee 500 kV transmission line. Western red bat is expected to be likely to occur based on the high amount of riparian habitat and open water through Bouquet Canyon and in Bouquet Reservoir. Tower construction and grading of new or existing access roads will result in loss of foraging habitat and degradation in habitat quality, although tower construction may provide additional roosting habitat for the western mastiff bat. Pallid bats in particular are sensitive to human disturbance, and construction during summer months when activity is higher may cause a greater degree of disturbance to the bats, potentially leading to their abandonment of the area (Vaughan 1976). This can indirectly lead to injury or mortality if it results in encounters with equipment or in decreased fitness at a new location due to unfamiliarity. Mating for pallid bats occurs from October to February, birth from April to July, and final weaning in August; mating in Townsend's big-eared bats generally occurs between October and February, with birth between May and July; mating in western mastiff bats typically begins in early March with birth ending in September; and mating in western red bats occurs in late summer or early fall with birth the following summer (Reid 2006). Construction during certain time periods of these windows may be more disturbing to some bat species than others, if present. Because bats are mainly nocturnal, any night construction would disturb them, disrupting foraging and potentially leading to injuries.

General practices that would reduce short-term or long-term effects to special-status bat species include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short-term or long-term effects to special-status bat species include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-21 (Protect sensitive bat species).

San Diego Black-tailed Jackrabbit

Under Segment H2, there may be direct or indirect effects to San Diego black-tailed jackrabbit, expected to have a possibility of occurring due to availability of suitable habitat. Tower construction and grading of new or existing access roads would cause habitat degradation and destruction for this species. Because black-tailed jackrabbits are usually nocturnal, construction at night would result in foraging disturbance and possibly injury or mortality from equipment (Reid 2006). During the day they sleep in depressions under bushes, and if for any reason one should be caught suddenly and unexpectedly by construction, injury or mortality could again occur (Reid 2006). Although birthing occurs year-round, young are able to run within a couple hours of birth and would be less likely to be harmed or killed by construction than species whose young can take several weeks to become independently mobile (Reid 2006). However, dispersing young during the day could leave them open to increased predation risk.

General practices that would reduce short-term or long-term effects to San Diego black-tailed jackrabbit include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to San Diego black-tailed jackrabbit include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program).

Unarmoured Threespine Stickleback

Under Segment H2, there would be direct or indirect construction impacts to unarmoured threespine stickleback, expected to be present along Segment H2 due to numerous sightings of fish within Bouquet Creek and its tributaries (CDFG 2010). Tower construction and grading of new and existing access roads may result in habitat loss or degradation depending on streambed impacts. While Bouquet Creek is located at the bottom of the canyon and construction will be on the side of a slope, impacts to the streambed below may occur if sediment is allowed to leave the site and fall either directly into the creek or into a drainage leading into it. Depending on the extent of any fallen sediment, this may result in altered hydrology, decreased water quality and clarity, or injury or mortality of any stickleback in the creek.

General practices that would reduce short-term or long-term effects to unarmored threespine stickleback or its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to unarmored threespine stickleback include HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), and BIO-6 (Implement a Worker Environmental Awareness Program).

Coastal Rosy Boa and Two-striped Garter Snake

Under Segment H2, there may be direct or indirect impacts to coastal rosy boa or two-striped garter snake. Coastal rosy boa is believed to be likely to occur based on availability of suitable habitat throughout the general Bouquet Canyon area including chaparral habitat and Bouquet Creek/Bouquet Reservoir, while two-striped garter snake is believed to be present due to a sighting by a POWER biologist in 2008. Tower construction and grading of new and existing access roads may result in habitat and vegetation loss. These species are usually found near water, so impacts would be expected to be higher near riparian areas, whereas most construction along this segment will be on hillsides. Direct injury or mortality may occur through crushing by foot traffic, vehicles, or heavy equipment and any construction activities. Moving rocks may also result in injury or mortality if any snakes are present in between the rocks or on the ground adjacent to them. Scaring away rodents or herpetofauna could also cause reductions in food supply for any snakes that may be in or near the ROW, while scaring snakes into the open may cause increases in predation. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any snakes in the area that may get trapped in them. Finally, individuals may be unintentionally run over by construction traffic should they be basking on the ground and undetected.

General practices that would reduce short-term or long-term effects to coastal rosy boa and two-striped garter snake include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to coastal rosy boa and two-striped garter snake include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Avian Risk

Segment H2 poses a low and moderate risk to avian species depending on specific sections of this segment, according to the Avian Risk Assessment. All risk factors except three—lines cross a reservoir or lake, lines are perpendicular to prevailing winds, and lines are within 0.5 mile of a water body with established emergent vegetation—are represented along this segment. The remaining risk factors include a new transmission corridor; the line crossing a recorded wetland; a wetland being within 0.5 mile of the transmission line; a reservoir or lake within 0.5 mile of the transmission line; the line crossing through two separate habitat usage types; the line crossing a valley or canyon perpendicularly; the line crossing through an area with wind speeds on average greater than 16.8 mph; a line convergence or divergence within 0.5 mile of the transmission line; a 40+% slope within 0.5 mile of the transmission line; a nearby ridgeline; a ridge crossing perpendicular to the line; and a valley nearby to the line. New transmission corridors pose collision risks to birds because they are not expecting the lines to be there. Wetlands, reservoirs, and lakes tend to create congregations of birds that can collide with lines during landing or takeoff, while lines that cross through different habitat types (such as agriculture and wetland) pose risks to birds which may be crossing between habitats. Lines crossing perpendicular to valleys or canyons pose risks to avian species because birds often fly through valley or canyons. Higher wind speeds are believed to result in lower numbers of avian migrants. Converging and diverging transmission lines can increase collision risk by causing birds to perform multiple evasive maneuvers. Lines placed near steep slopes are risky because birds such as California condors and peregrine falcons nest on slopes and cliff faces, which increases the risk of collision when coming or going from the nest. Crossing near or perpendicular to ridgelines is a risk factor because raptors use thermal updrafts to soar near ridges, and may collide with transmission lines if they are flying too close.

Potential effects as a result of these factors include collision and electrocution of birds at transmission lines. GP-8 and GP-11 would protect local and migratory bird species that may occur and reduce short-term and long-term effects to migratory bird species in the BRRTP area, respectively, while applicable mitigation measures include BIO-3 (Incorporate riparian area avoidance and permit measures) and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Other Wildlife

Common species which may occur along Segment H2 include species such as coyote, western whiptail, white-tailed antelope ground squirrel, Pacific tree frog, California tree frog, western toad, kangaroo rat, and various unknown migratory bird species. Construction on Segment H2 may result in injury, mortality, or displacement of any of these species due to crushing or collision during grading of access roads or tower sites; loss of habitat or reduction in food availability during construction; and disturbance from construction noise and vibration leading to dispersal.

Vegetation Communities

The vegetation types of the proposed Segment H2 include:

- Agricultural Land
- Riversidian Sage Scrub
- Chamise Chaparral
- Scrub Oak Chaparral
- Southern Mixed Chaparral

The one special-status plant species that is known to be present on Segment H2 is:

- Peirson's morning-glory (*Calystegia peirsonii*)

The 15 special-status plant species that are likely to occur within Segment H2 include:

- Nevin's barberry (*Berberis nevinii*)
- Round-leaved filaree (*California macrophylla*)
- Slender mariposa lily (*Calochortus clavatus* var. *gracilis*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Alkali mariposa lily (*Calochortus striatus*)

- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)
- Slender-horned spineflower (*Dodecahema leptoceras*)
- San Gabriel bedstraw (*Galium grande*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Pale-yellow layia *(Layia heterotricha*)
- Ross's pitcher sage (*Lepechinia rossii*)
- Short-joint beavertail (*Opuntia basilaris* var. *brachyclada*)
- Chaparral ragwort (*Senecio aphanactis*)
- Greata's aster (*Symphyotrichum greatae*)

The 36 special-status plants that could possibly occur within Segment H2 include:

- California androsace (*Androsace elongata* ssp. *acuta*)
- Kusche's sandwort (*Arenaria macradenia* var. *kuschei*)
- Braunton's milk-vetch (*Astragalus brauntonii*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Palmer's mariposa lily (*Calochortus palmeri* var. *palmeri*)
- Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*)
- Southern tarplant (*Centromadia parryi* ssp. *australis*)
- Santa Susana tarplant (*Deinandra minthornii*)
- Mojave tarplant (*Deinandra mohavensis*)
- Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*)
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Tehachapi buckwheat (*Eriogonum callistum*)
- Kern buckwheat (*Eriogonum kennedyi* var. *pinicola*)
- Delicate bluecup (*Githopsis tenella*)
- Urn-flowered alumroot (*Heuchera elegans*)
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)
- California satintail (*Imperata brevifolia*)
- Southern California black walnut (*Juglans californica*)
- Fragrant pitcher sage (*Lepechinia fragrans*)
- Madera leptosiphon (*Leptosiphon serrulatus*)
- Ocellated lily (*Lilium humboldtii* ssp. *ocellatum*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Calico monkeyflower (*Mimulus pictus*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)
- Ojai navarretia (*Navarretia ojaiensis*)
- Rock Creek broomrape (*Orobanche valida* ssp. *valida*)
- Gairdner's yampah (*Perideridia gairdneri* ssp. *gairdneri*)
- White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)
- Coulter's matilija poppy (*Romneya coulteri*)
- Parish's checkerbloom (*Sidalcea hickmanii ssp. parishii)*
- *Laguna Mountains* jewelflower (*Streptanthus bernardinus)*
- *Southern jew*elflower (*Streptanthus campestris*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- San Bernardino aster (*Symphyotrichum defoliatum*)
- Lemmon's syntrichopappus (*Syntrichopappus lemmonii*)

The five special-status plants that are unlikely to occur within Segment H2 include:

- San Gabriel Manzanita (*Arctostaphylos gabrielensis*)
- San Gabriel River dudleya (*Dudleya cymosa* ssp. *crebrifolia*)
- Rock monardella (*Monardella viridis* var. *saxicola*)
- Baja navarretia (*Navarretia peninsularis*)
- Southern Mountains skullcap (*Scutellaria bolanderi ssp. austromontana*)

Slender mariposa lily was found at approximately 57 locations along Segment H in 2008 (See Appendix B). Surveys found an estimated 3,928 individuals located on recently-burned chaparral, coastal scrub, and grassland communities.

Direct impacts to special-status plant species may occur in a variety of ways, including the direct removal of plants during the course of construction. Clearing and grading associated with the placement of towers or the grading of access or spur roads may also result in the alteration of soil conditions, including the loss of native seed banks and changes to the topography and drainage of a site such that the capability of the habitat to support special-status species is impaired. Indirect impacts include the creation of conditions that are favorable for the invasion of weedy exotic species that prevent the establishment of desirable vegetation and may adversely affect wildlife. Construction on steep hillsides may also result in off-site sediment transport that may bury rare plants in adjacent habitat or alter soil conditions. Dust from road travel, grading, or other construction activities may also reduce photosynthetic capacity in plants over time or inhibit reproduction by physically coating reproductive structures or excluding insect pollinators. Soil disturbance may also result in the spread of invasive plant species. Trampling due to foot or vehicular traffic could result in soil compaction if it occurs repeatedly within any specific area; soil compaction may in turn lead to reduced water absorption and increased runoff, potentially contributing to an increase in non-native plant species, which could be more tolerant of these conditions.

The potential introduction or spread of noxious and invasive weeds would occur primarily during construction activities, but would also continue to occur during operation and maintenance phases of the Project. The introduction of noxious and invasive weeds would be related to ground disturbance from clearing and grading, expansion of access roads, construction of spur roads, and road maintenance; the use of vehicles, construction equipment, or earth materials contaminated with non-native plant seed; use of straw bales or wattles that contain seeds of non-native plant species; and enhanced public access to the Project corridor during and after construction. Additionally, weed seeds are often spread on equipment or clothing by construction or maintenance personnel. This would provide many avenues for new propagules (any part of a plant that may generate a new individual plant) to be carried into areas that previously were isolated from sources of noxious weed seeds. Direct impacts associated with the introduction of noxious weeds could occur when noxious weeds become established in an area. These invasive plant species can cause a permanent or long-lasting change to the environment by increasing vegetative cover, creating a dense layer that prevents native vegetation from germinating, altering the edaphic and hydrological conditions through nitrogen fixation (as in Spanish broom), or may drain the water table (as in giant reed). Noxious weeds can create such an unfavorable environment for wildlife that associate, mutualistic species necessary for native plant life cycles, such as seed dispersers, fossorial mammals, or pollinators, are lost from the area. Indirect impacts attributed to the colonization of noxious weeds could include a gradual decrease in natural biodiversity, as noxious weed infestations may extirpate native plant populations.

Operational impacts would also include trampling or crushing due to public use of new or improved spur roads and access roads, increased erosion, and the spread and colonization of noxious weeds. Other operational impacts include removal and trimming of vegetation during maintenance activities. Restoration activities may inadvertently lead to negative effects on special-status plant species, should they be present during construction. For instance, seed collection from native plants may result in the unintentional trampling of smaller listed species should they be present in the area, or in the removal of seeds from listed species. Effective preconstruction flagging of these species would assist in reducing the likelihood of incidental effects during seed collection or even weed removal. Weed removal may also lead to species that are not non-native being unintentionally treated or removed.

General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-24, GP-25, GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat).

TABLE 39. MITIGATION MEASURES APPLICABLE TO SEGMENT H2

Wildlife Species	Mitigation Measures		Vegetation Community/Plant Species	Mitigation Measures
Western Spadefoot Toad	AIR-2a, HYD-1, HYD-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6		Chamise Chaparral	AIR-2a, BIO-1, BIO-2, BIO-13
Least Bell's Vireo, Southwestern Willow Flycatcher, Western Yellow-billed Cuckoo	AIR-2a, HYD-1, HYD-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-8, BIO-11, BIO-14		Riversidian Sage Scrub	AIR-2a, BIO-1, BIO-2, BIO-4, BIO-6, BIO-13
California Condor	HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-7, BIO-11,BIO-18		Scrub Oak Chaparral	AIR-2a, BIO-1, BIO-2, BIO-13
Bat Species	HYD-1, BIO-1, BIO-2, BIO-4, BIO-5, BIO-6, BIO-21		Southern Mixed Chaparral	AIR-2a, BIO-1, BIO-2, BIO-13
San Diego Black-tailed Jackrabbit	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6		Special-status Plant Species	AIR-2a, BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-13
Unarmored Threespine Stickleback	HYD-1, HYD-2, BIO-2, BIO-3, BIO-4, BIO-6			
Coastal Rosy Boa and Two-striped Garter Snake	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-22			
Bald and Golden Eagle	HYD-1, BIO-1, BIO-2, BIO-4, BIO-5, BIO-6, BIO-7, BIO-11, BIO-17			
Raptors and Other Migratory Birds	HYD-1, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-8, BIO-11			
General Wildlife	BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-8, BIO-11			

TABLE 40. BIOLOGICAL RESOURCES FOUND WITHIN SEGMENT H2 AND POTENTIAL ACREAGE OF DISTURBANCE

	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
USFS GIS Modeled Habitat				
Spotted Owl	22.8	22.8	2.5	2.5

	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Unarmoured Three-spine Stickleback	1.2	1.2	0.1	0.1
Riparian Conservation Area				
Yes	20.8	20.8	2.2	2.2
Avian Assessment Impacts				
Low	22.4	22.4	2.4	2.4
Moderate	50.6	50.6	8.1	9.2
Known Special Status Plant Species				
Slender Mariposa Lily	10.4	10.4	1.1	1.1
Pierson's Morning Glory	0.4	0.4	0.0	0.0
Known Weed Species				
Tree Tobacco	1.2	1.2	0.1	0.1
Saltcedar	0.8	0.8	0.1	0.1
Star Thistle; Tocalote	2.4	2.4	0.3	0.3
Biological Protected Area				
San Andreas Rift Zone SEA	9.3	9.3	2.7	3.4
Vegetation				
Agricultural Land	5.3	5.3	1.6	2.1
Chamise Chaparral	37.5	37.5	4.0	4.0
Riversidian Sage Scrub	7.1	7.1	1.7	2.1
Scrub Oak Chaparral	1.2	1.2	0.1	0.1
Southern Mixed Chaparral	21.8	21.8	3.0	3.3

Because Segment H2 has been eliminated from consideration for construction, the data provided in this table for this segment has not been updated and reflects the most recent data before it was eliminated.

7.1.12 Segment I

The northernmost 11 miles of Segment I is composed of roughly 50% California annual grasslands and 25% Riversidian sage scrub, with the remaining 25% composed of a patchwork of scrub oak chaparral, southern mixed chaparral, and development. Two transmission lines (230 kV and 500 kV) are concomitant with the northern section of Segment I. The majority of the southern section is composed of Riversidian sage scrub with minor components of scrub oak chaparral, southern mixed chaparral, chamise chaparral, and additional development along Sierra Highway and around Bouquet Canyon. Some small areas of southern riparian scrub and southern sycamore alder riparian woodland are also present. Disturbance observed in Segment I include cattle grazing, off-highway vehicle (OHV) use, weed invasion and development.

Wildlife

Western Spadefoot Toad

Under Segment I, there may be direct or indirect effects to western spadefoot toad, expected to be likely to occur on this segment due to numerous sightings within five miles of this segment and suitable grassland and/or chaparral habitat located throughout the segment and sandy riparian habitat around Vasquez Canyon (CDFG 2010). Tower construction and grading of new or existing access roads will destroy or degrade grassland or shrubby habitat that may be utilized by this species. Although streambeds will likely be avoided by final line placement, they may still experience effects from vehicular traffic, such as increased sedimentation or hydrological changes. Direct injury or mortality from crushing by equipment or vehicles may occur should individuals be present on the road or in the construction area.

Because anurans are known to be most active at night, any night construction may also result in crushing of any animals that travel across the road.

General practices that would reduce short-term and long-term effects to western spadefoot toad include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to western spadefoot toad include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program).

Burrowing Owl

Under Segment I, there may be direct or indirect construction impacts to burrowing owl, expected to have a possibility of occurring based on two separate recorded sightings within one mile and within three miles, but with an observation of future residential development along Segment I by POWER biologists in 2008 (CDFG 2010). Most of Segment I may be too mountainous for this species, except in the northern end where the terrain is very flat, yet disturbed by several residential properties. Tower construction and grading of new or existing access roads will result in habitat fragmentation and vegetation loss, which will result in a degradation of the overall habitat quality, making it less appealing and less suitable for burrowing owls. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-16, will identify any possible active or inactive burrowing owl burrows, but some burrows may still go unnoticed or be incorrectly identified as rodent-only burrows and may therefore be crushed or damaged by vehicles, heavy equipment, or trampling. This may result in the injury or mortality of one or more owls if they are present. Where construction occurs near the homes in the northern part of the segment, it may draw the attention of scavengers or domesticated animals, resulting in an increased risk of predation. Because burrowing owls are most active at dusk and dawn (Zarn 1974) and have a reduced capability to forage at night (Voous 1988), the presence of humans, vehicles, and heavy equipment may disrupt any foraging or nesting practices during construction hours.

General practices that would reduce short-term or long-term effects to burrowing owl include GP-8, GP-23, GP-24, GP-25, GP-34, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to burrowing owl include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-16 (Protect burrowing owl).

Swainson's Hawk

Under Segment I, there may be direct or indirect effects to Swainson's hawk. Swainson's hawk is expected to have a possibility to occur based on the presence of poor-quality grassland in the upper end of the segment combined with nesting habitat on existing towers and some pockets of trees around residences, and presence of the California Aqueduct through the segment. Construction of new towers and grading of new or existing access roads would result in foraging habitat loss to this species. Direct injury or mortality from construction is not expected based on the lack of recorded sightings but should any hawks nest near the proposed ROW they may be displaced by construction disturbance. If this is the case, adults and/or their young would likely need to relocate, which could possibly result in indirect injury or mortality as they move to inhabit new locations. Power line design could result in injury or mortality to

Swainson's hawks that are flying through the area or even perching on the towers, and appropriate tower design and protective measures will need to be enforced to prevent this. Birds, particularly raptors, are also known to perch, roost, or even nest on transmission structures (APLIC 2006). However, addition of a new transmission line on this segment is not expected to appreciably increase the risk of collision or electrocution because there are already numerous lines on this segment.

General practices that would reduce short-term or long-term effects to Swainson's hawk include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Swainson's hawk include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

California Condor

Under Segment I, there may be direct or indirect impacts to California condor associated with implementation of the proposed action. This species is expected to have a possibility of occurring based on GPS data supplied by USFWS (USFWS 2008b, USFWS 2009d). Tower construction and grading of new or existing access roads will result in habitat and vegetation loss. It is not expected that the amount of vegetation and habitat loss that will occur on this segment will have a significant effect on this species, as immatures have been measured foraging over 140 miles and nesting pairs typically 31 to 44 miles in a single day (USFWS 1996b) and can likely adapt to the relatively minor change. Construction may result in trash or microtrash being left behind by the crews, even with the implementation of mitigation measure BIO-18, Protect California Condor. Any leftover trash or microtrash has the possibility to be ingested by condors, which in turn would be regurgitated for chicks to feed on, which can lead to mortality of the chicks (USFS 2008). This is a short-term impact that would be addressed by the implementation of BIO-18 and the creation of a Proper Disposal of Construction Waste Plan for the Project. As stated in mitigation measure BIO-6, road kill within the construction area would be reported within 24 hours to the USFS or BLM if on NFS or BLM land, respectively, or to the local animal control center if on non-federal lands. The construction of the towers and presence of new transmission lines may stress condors or lead to a collision depending on eventual placement and proximity to existing lines, which is anticipated to be resolved through mitigation measure BIO-18. Based on the number of sightings in this area, it is highly unlikely that any California condors are nesting near the proposed ROW (USFWS 2008b, USFWS 2009d). If condors are present in the construction area then all construction will stop until the condor leaves the area; the biological monitor will document the occurrence and report it to USFWS (and USFS if applicable).

General practices that would reduce short-term or long-term effects to California condor include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to California condor include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-18 (Protect California condor). Formal consultation is being conducted with the USFWS to determine if any additional protection measures other than those mentioned above are necessary to protect California condors. In addition, any reasonable and prudent measures requested by the USFWS to protect the California condor will be implemented.

Loggerhead Shrike

Under Segment I, there may be direct or indirect effects to loggerhead shrike, expected to have a possibility of occurring due to availability of suitable habitat. Tower construction and grading of new or existing access roads would result in habitat and vegetation loss. This would cause habitat degradation which may make the area less appealing to loggerhead shrike individuals. It is expected that preconstruction surveys and/or biological monitoring will locate any nests within shrubs or trees in the area, although if any nests are not located, this could result in injury or mortality of individuals. Construction noise and human presence may cause birds to disperse from the area, potentially abandoning a nest if any birds are nesting nearby during construction.

General practices that would reduce short-term or long-term effects to loggerhead shrike include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to loggerhead shrike include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Pallid Bat, Townsend's Big-eared Bat, Western Mastiff Bat, and Western Red Bat

Under Segment I, there may be direct or indirect construction impacts to pallid bat, Townsend's big-eared bat, western mastiff bat, and western red bat. All four species are expected to be likely to occur based on the availability of suitable habitat on Segment I, such as rocky areas for roosting in the mountainous region of the segment, along with riparian habitat and chaparral for foraging throughout this same area. Tower construction and grading of new or existing access roads would result in loss of foraging habitat and degradation in habitat quality, although tower construction may provide additional roosting habitat for the western mastiff bat. Pallid bats and Townsend's big-eared bats in particular are sensitive to human disturbance, and construction during summer months, when bat activity is higher, may cause a greater degree of disturbance to the bats, potentially leading to their abandonment of the area (Vaughan and O'Shea 1976, Piaggio 2005). This can indirectly lead to injury or mortality if it results in encounters with equipment or in decreased fitness at a new location due to unfamiliarity. The bats would likely return to the same roost the following season if it were still available (B. Doering personal communication 2011). Mating for pallid bats occurs from October to February, birth from April to July, and final weaning in August; mating in Townsend's big-eared bats generally occurs between October and February, with birth between May and July; mating in western mastiff bats typically begins in early March with birth ending in September; and mating in western red bats occurs in late summer or early fall with birth the following summer (Reid 2006). Construction during certain time periods of these windows may be more disturbing to some bat species than others, if they are present.

Should a bat roost be disturbed by construction, complete abandonment of the roost may result, particularly for more sensitive species like pallid bats or Townsend's big-eared bats. This may lead to complete nesting failure for the season, resulting in a loss of that year's new bat births. Because bats are mainly nocturnal, any night construction would disturb them, disrupting foraging and potentially leading to injuries. Disruption of hibernation is unlikely given the generally warm winters in Southern California. McNab (1974) suggests that only bats that are both small and do not cluster in groups can hibernate when the environmental temperature is above 14°C (57.2°F). Pallid bats may roost alone or in groups from two to several hundred and, although they will hibernate in cold parts of their range, they overwinter in coastal California (Rambaldini 2005). They have been reported to remain active at temperatures between -5°C (23°F) and 10°C (50°F). Townsend's big-eared bats may hibernate in groups of single individuals to several hundred; in some areas, mainly in the eastern U.S., they may hibernate in groups up to several thousand (Piaggio 2005). Western mastiff bats cluster in groups of 30 to several hundred and do not undergo long periods of hibernation, instead remaining periodically active throughout the winter (Siders 2005). Although winter behavior of western red bats is not well understood, it is possible that they also do not hibernate for long periods, as this species has been reported to be found foraging during the winter on warm days, even in northern California (Bolster 2005). It is likely that bats in the Project area would periodically enter states of torpor but would generally remain relatively active compared to bats in colder parts of the country, where hibernation is more feasible.

General practices that would reduce short-term or long-term effects to special-status bat species include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short-term or long-term effects to special-status bat species include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-21 (Protect sensitive bat species).

Southern Grasshopper Mouse

Under Segment I, there may be direct or indirect effects to southern grasshopper mouse, expected to have a possibility of occurring due to a historical occurrence along this segment and, several riparian areas, and sections of chaparral in its lower half and desert scrub in its upper half. Tower construction and grading of new or existing access roads would result in habitat loss, resulting in a decrease in food availability for these species and possibly an increase in predation risk due to reduced vegetation cover. Vegetation removal or soil compaction would result in habitat degradation for this species. Preconstruction surveys would identify any possible burrows, but some burrows may still go unnoticed if under vegetation. These burrows may be crushed during construction, resulting in possible injury or death to one or more individuals and a reduction in suitable hiding places. Grasshopper mice may be scared out of their burrows by construction noise or vibration, but because this species may maintain multiple home and accessory burrows (Reid 2006), it is not expected that this would result in the complete displacement of any individuals unless they happen to be currently residing only in the ROW. Displacement of individuals from burrows may lead to injury or mortality due to exposure to predation from raptors or other predators. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any small mammals in the area, which may fall into them.

General practices that would reduce short-term or long-term effects to southern grasshopper mouse include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to southern grasshopper mouse include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

American Badger

Under Segment I, there may be direct or indirect construction impacts to American badger, expected to be have a possibility of occurring based on availability of suitable habitat in the northern section of this segment. Tower construction and grading of new or existing access roads will result in habitat and vegetation loss, which may result in a temporary increase in food availability due to reduced cover for rodents and other species that badgers prey upon. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-20, will identify any possible active or inactive American badger burrows, but some burrows may still go unnoticed and may therefore be crushed or damaged by vehicles, heavy equipment, or trampling. This may in turn result in the injury or mortality of one or more badgers should they be present. Badgers may be displaced by construction activity, including noise and vibrations, but because their home ranges can be up to 400 acres for females and up to 600 acres for males it is likely that any displaced individuals would be able to expand outside of the construction zone without a significant impact on their well-being. However, any badgers in the area may be accustomed to human presence, as this area is heavily populated along its southern section in particular, with scattered residences and communities along its northern section.

General practices that would reduce short-term or long-term effects to American badger include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to American badger include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Desert Kit Fox

Under Segment I, there may be direct or indirect construction impacts to desert kit fox, expected to have a possibility of occurring due to availability of suitable chaparral, desert scrub, and grassland habitat in the northern and southern sections. Tower construction and grading of new or existing access roads will result in habitat loss, which may result in a temporary increase in food availability by providing less cover for wildlife that the desert kit fox preys upon. Habitat degradation may also occur as a secondary effect of adjacent habitat loss or general construction access. This could result from the spread of non-native vegetation in the construction or access area or from excessive dust from construction in the desert area, necessitating the implementation of non-native weed prevention and dust control measures. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-20, will identify any possible active or inactive desert kit fox burrows to the extent possible within the agricultural fields, but any unnoticed burrows may be crushed during construction, possibly resulting in injury of mortality of one or more kit foxes that may be present. Nearby kit foxes may be scared away from the area or to other burrows by construction noise or vibrations, but as construction presence will only be temporary, it is expected that this would result in a short-term effect. It is likely that any present kit foxes are used to human presence due to the activity along this segment, but they may still be stressed enough by construction to cause dispersal.

General practices that would reduce short-term or long-term effects to desert kit fox include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to desert kit fox include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Coast (San Diego) Horned Lizard

Under Segment I, there would be direct or indirect effects to coast horned lizard, expected to be likely to occur due to reported occurrences (CDFG 2010). Tower construction and grading of new or existing access roads would result in habitat and vegetation loss, and may result in direct injury or mortality of individuals. Removal of chaparral for the grading of access roads or tower sites would reduce or degrade suitable habitat for this species. Additionally, any coast horned lizards that go undetected by preconstruction surveys—in compliance with mitigation measure BIO-22—and are present under vegetation, on roads, or in burrows, may be crushed by foot traffic, vehicles, or heavy equipment. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any coast horned lizards which may fall into them. It is expected that the risk of falling into an open hole would be greater overnight, as the construction noise and vibrations would be more likely to keep any coast horned lizards from approaching too close to the active site during the day. The construction work may also lead to dispersal of individuals from the area, potentially leading to an increased risk or predation or competition if any animals are forced to relocate to unfamiliar territory.

General practices that would reduce short-term or long-term effects to coast horned lizard include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to coast horned lizard include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Unarmored Threespine Stickleback

This species, while not included in the direct construction corridor impacts, is nevertheless known to be present near Segment I in Bouquet Creek. Under Segment I, there would be direct or indirect construction impacts to unarmored threespine stickleback, expected to be present along Segment I due to numerous sightings of fish within Bouquet Creek and its tributaries (CDFG 2010). A potential access point for Segment I at Esguerra Road would pass directly through Bouquet Creek, which may result in sediment deposition or alteration of stream hydrology through the passing of vehicles and heavy equipment. This crossing is in an intermittent part of the creek, approximately 80 feet wide; construction may be able to be timed to avoid direct impacts to water quality and any fish in it. Depending on the extent of any introduced sediment or stream impacts, this may result in altered hydrology, decreased water quality and clarity, or injury or mortality of any stickleback in the creek. Additionally, Project equipment and vehicles could carry non-native plant seeds in their tires or on their carriages, potentially resulting in the spread of non-native plant species if the seeds fall off and propagate in new areas. This area would be subject to mitigation measure BIO-3.

General practices that would reduce short-term or long-term effects to unarmored threespine stickleback or its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to unarmored threespine stickleback include HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), and BIO-6 (Implement a Worker Environmental Awareness Program).

California Legless Lizard

Under Segment I, there may be direct or indirect construction impacts to California legless lizard, expected to have a possibility of occurring based on two recent reported occurrences within four miles of the segment and one 15-year old occurrence approximately 0.20 mile from the segment. One recent occurrence resulted in two dead and two injured individuals, while the second recent occurrence resulted in the translocation of 18 adults and eight juveniles due to impending development at the site. The older sighting was of a dead individual. There may still be locations along this segment that could support this species, although there are no other reported occurrences. This species is known to reside in moist areas, and apparently requires high moisture content in the soil it inhabits. Direct injury or mortality of individuals of this species is possible because it hides under leaf litter and other cover, where it would not be seen. In areas where construction is present in habitat that could support this species or if vehicles pass through areas of suitable habitat, they may crush individuals or compact the soil, resulting in long-term reduced habitat quality for this fossorial species. This would also be a concern because legless lizards are primarily active during the morning and evening (Fellers 2009) and would generally be inactive and basking throughout the day, leaving individuals more open to injury or mortality through construction.

Encroachment near riparian areas—or sandy areas, such as that around Vasquez Canyon—would be most likely to damage or kill individuals of this species, although open chaparral and even desert scrub may be used by this species (Stebbins 2003, Fellers 2009). While it forages in leaf litter during the day, it will emerge at dusk or at night, and night construction may affect its regular activities. Exposure on the surface during the day or by lighting at night may subject it to predation. Habitat loss or degradation could potentially occur where construction or construction access is near riparian areas, chaparral in loose soils, or leaf litter around oak woodlands (Fellers 2009). Because this species tends to occur in moist areas or riparian areas when possible, protecting riparian habitats would benefit it. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any California legless lizards in the area, which may get trapped in them.

General practices that would reduce short-term or long-term effects to California legless lizard include GP-3, GP-4, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to California legless lizard include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Southwestern Pond Turtle

Under Segment I, there may be direct or indirect construction impacts to southwestern pond turtle, expected to have a possibility to occur based on multi-year sightings within one mile of the segment in an area that was threatened by development and by proximity to Elizabeth Lake Road (CDFG 2010). Encroachment upon suitable riparian habitat on this segment is likely to be minimal due to the relative lack of it. There is the potential for the aforementioned area to be affected by construction. Construction would cross over the Ritter Ridge area and eventually cross Elizabeth Lake Road. While the actual mapped location in Amargosa Creek is located south of Elizabeth Lake Road, the creek crosses the road less than 1.5 miles downstream, and if suitable habitat occurs throughout the area, it is possible that construction runoff from any uphill tower sites could degrade habitat in the creek or adjacent areas or injure individual turtles. The transmission line would span over the creek itself. Actual habitat loss would likely be minimal due to the general lack of suitable habitat for this species along this segment, but habitat loss could occur were the transmission line to be in the vicinity of southwestern pond turtle habitat.

Because turtles are known to migrate up to 5 km if they are stressed for sufficient habitat, it is possible, though probably unlikely, that turtles may be found passing through the construction area (Bettelheim 2005). It is possible that turtles may venture into the construction area during their seasonal migrations into or out of wintering habitat or for egg-laying. Should any turtles be present near construction, injury or mortality could occur if they were on land or buried for the winter, depending on construction timing. Any turtles that happen to be pushed into the open by construction would also be open to predation. For this reason, BIO-22 would require surveys to be conducted by a qualified biologist prior to construction in areas of suitable habitat, such as this area.

General practices that would reduce short-term and long-term effects to southwestern pond turtle include GP-3, GP-5, GP-11, GP-17, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to southwestern pond turtle include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4

(Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Coastal Rosy Boa and Two-striped Garter Snake

Under Segment I, there may be direct or indirect effects to coastal rosy boa or two-striped garter snake. Coastal rosy boa is expected to be likely to occur due to availability of rocky chaparral habitat on this segment with several riparian areas, while two-striped garter snake is expected to have a possibility of occurring based on several perennial sightings greater than 10 years old within one mile of this segment, the most recent being from 1999 (CDFG 2010). Construction of new towers and access roads will result in vegetation and habitat loss, and any movement of rocky areas for construction purposes may destroy additional habitat and refuges. Moving rocks may also result in injury or mortality if any snakes are present in between the rocks or on the ground adjacent to them. Excessive disturbance to washes or streambeds may have additional impacts to habitat, as these snake species are attracted to water sources, particularly two-striped garter snake, although perennial water sources on Segment I are few, if any (Stebbins 2003). Construction near suitable aquatic habitat along this segment may be more stressful to these species, especially two-striped garter snake, than it would be on others because perennial aquatic habitat is relatively uncommon along this segment. Disturbing snakes that are in the area and causing them to leave areas of suitable habitat, or degrading aquatic habitat, may be particularly stressful to them. Scaring away rodents or herpetofauna could also cause reductions in food supply for any snakes that may be in or near the ROW, while scaring snakes into the open may cause increases in predation. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any snakes in the area that may get trapped in them. Finally, individuals may be unintentionally run over by construction traffic should they be basking on the ground and undetected.

General practices that would reduce short-term or long-term effects to coastal rosy boa and two-striped garter snake include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to coastal rosy boa and two-striped garter snake include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Mule Deer

For a discussion of potential impacts to the mule deer as a result of construction on Segment D, please refer to the Management Indicator Species report.

Mountain Lion

For a discussion of potential impacts to the mountain lion as a result of construction on Segment D, please refer to the Management Indicator Species report.

Song Sparrow

For a discussion of potential impacts to the song sparrow as a result of construction on Segment D, please refer to the Management Indicator Species report.

Avian Risk

Segment I poses a low, moderate, or high risk to avian species depending on specific sections of the segment, according to the Avian Risk Assessment. All risk factors except three—lines cross over a reservoir or lake, lines cross through two distinct habitat usage types, and lines pass within 0.5 mile of a water body with established emergent vegetation—are present on this segment. The remaining risk factors include a new transmission corridor; the line crossing a recorded wetland; a wetland being within 0.5 mile of the transmission line; a reservoir or lake within 0.5 mile of the transmission line; the line crossing a valley or canyon perpendicularly; the line crossing perpendicular to prevailing winds; the line crossing through an area with wind speeds on average greater than 16.8 mph; a line convergence or divergence within 0.5 mile of the transmission line; a 40+% slope within 0.5 mile of the transmission line; a nearby ridgeline; a ridge crossing perpendicular to the line; and a valley nearby to the line. New transmission corridors pose collision risks to birds because they are not expecting the lines to be present. Wetlands, reservoirs, and lakes tend to create congregations of birds that can collide with lines during landing or takeoff, while lines crossing perpendicular to valleys or canyons pose risks to avian species because birds often fly through valley or canyons. Also, winds that are prevailingly perpendicular to transmission lines can blow birds into the lines, while higher wind speeds are believed to result in lower numbers of avian migrants. Converging and diverging transmission lines can increase collision risk by causing birds to perform multiple evasive maneuvers. Lines placed near steep slopes are risky because birds such as California condors and peregrine falcons nest on slopes and cliff faces, which will likely increase the risk of collision when coming or going from the nest. Crossing near or perpendicular to ridgelines is a risk factor because raptors use thermal updrafts to soar near ridges, and may collide with transmission lines if they are flying too close.

Potential effects as a result of these factors include collision and electrocution of birds at transmission lines. GP-8 and GP-11 would protect local and migratory bird species that may occur and reduce short-term and long-term effects to migratory bird species in the BRRTP area, respectively, while applicable mitigation measures include BIO-3 (Incorporate riparian area avoidance and permit measures) and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Other Wildlife

Common species which may occur along Segment I include species such as common side-blotched lizard, Pacific tree frog, California tree frog, western toad, kangaroo rat, and various unknown migratory bird species. Segment I may result in injury, mortality, or displacement of any of these species due to crushing or collision during grading of access roads or tower sites; loss of habitat or reduction in food availability during construction; and disturbance from construction noise and vibration leading to dispersal.

Vegetation Communities

The vegetation types of the proposed Segment I include:

- California Annual Grassland
- Riversidian Sage Scrub
- Disturbed/Developed
- Chamise Chaparral
- Southern Mixed Chaparral
- Scrub Oak Chaparral
- Southern Riparian Scrub
- Southern Sycamore Alder Riparian Woodland

Two special-status plants are found within the proposed Segment I and include:

- Slender mariposa lily (*Calochortus clavatus* var. *gracilis)*
- Short-joint beavertail (*Opuntia basilaris* var. *brachyclada)*

The 15 special-status plant species that are likely to occur on Segment I include:

- Nevin's barberry (*Berberis nevinii*)
- Round-leaved filaree (*California macrophylla*)
- Plummer's mariposa lily (*Calochortus plummerae)*
- Alkali mariposa lily (*Calochortus striatus)*
- Peirson's morning-glory (*Calystegia peirsonii*)
- Southern tarplant (*Centromadia parryi ssp. australis*)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina)*
- Parry's spineflower (*Chorizanthe parryi* var. *parryi)*
- Slender-horned spineflower (*Dodecahema leptoceras)*
- San Gabriel bedstraw (*Galium grande)*
- Pale-yellow layia (*Layia heterotricha)*
- Ross's pitcher sage (*Lepechina rossii*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Chaparral ragwort (*Senecio aphanactis)*
- Greata's aster (*Symphyotrichum greatae)*

The 38 special-status plants that could possibly occur within Segment I include:

- California androsace (*Androsace elongata* ssp. *acuta*)
- Kusche's sandwort (*Arenaria macradenia* var. *kuschei*)
- Braunton's milk-vetch (*Astragalus brauntonii*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Palmer's mariposa lily (*Calochortus palmeri* var. *palmeri*)
- Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*)
- White pygmy poppy (*Canbya candida*)
- Mojave Indian paintbrush (*Castilleja plagiotoma*)
- Santa Susana tarplant (*Deinandra minthornii*)
- Mojave tarplant (*Deinandra mohavensis*)
- Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*)
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Tehachapi buckwheat (*Eriogonum callistum*)
- Kern buckwheat (*Eriogonum kennedyi* var. *pinicola*)
- Delicate bluecup (*Githopsis tenella*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Urn-flowered alumroot (*Heuchera elegans*)
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)
- California satintail (*Imperata brevifolia*)
- Southern California black walnut (*Juglans californica*)
- Fragrant pitcher sage (*Lepechinia fragrans*)
- Madera leptosiphon (*Leptosiphon serrulatus*)
- Ocellated lily (*Lilium humboldtii* ssp. *ocellatum*)
- Calico monkeyflower (*Mimulus pictus*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)
- Ojai navarretia (*Navarretia ojaiensis*)
- Baja navarretia (*Navarretia peninsularis*)
- Rock Creek broomrape (*Orobanche valida* ssp. *valida*)
- Gairdner's yampah (*Perideridia gairdneri* ssp. *gairdneri*)
- White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)

- Coulter's matilija poppy (*Romneya coulteri*)
- Parish's checkerbloom (*Sidalcea hickmanii ssp. parishii*)
- Laguna Mountains jewelflower (*Streptanthus bernardinus*)
- Southern jewelflower (*Streptanthus campestris*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- San Bernardino aster (*Symphyotrichum defoliatum*)
- Lemmon's syntrichopappus (*Syntrichopappus lemmonii*)

The four special-status plant with that is unlikely to occur within Segment I is:

- San Gabriel manzanita (*Arctostaphylos gabrielensis*)
- San Gabriel River dudleya (*Dudleya cymosa* ssp. *crebrifolia*)
- Rock monardella (*Monardella viridis* var. *saxicola*)
- Southern Mountains skullcap (*Scutellaria bolanderi ssp. austromontana*)

Slender mariposa lily was mapped on Segment I with points and polygons. A total of four polygons were mapped with populations ranging from 50 to 120 individuals. There were 18 points mapped with populations ranging from two to 120 individuals. A total of 420 individuals were found and mapped. These individuals were found in all aspects, except west-facing, and in the mixed chaparral, Riversidian sage scrub, and non-native grassland.

Short-joint beavertail was mapped on Segment I with three points. Two points were one individual and one point was a population of three individuals. These individuals were found in the California annual grassland, southern mixed chaparral, and buckwheat scrub.

Sections of Segments I cross BLM lands; surveys within this area consisted of mapping vegetation communities. The BLM lands crossed by the proposed alternative transmission line routes are located on the lower east-facing slopes of the easternmost Transverse Ranges, the northernmost slopes of the San Gabriel Mountains and within the western edge of the Mojave Desert. The vegetation types in this area are characteristic of dry interior desert-influenced mountain ranges and of the Mojave Desert. Holland vegetation types were assigned during the mapping exercise, so that the vegetation mapping would be consistent with mapping of the ANF lands.

The vegetation types mapped within BLM lands on Segment I include the following two natural upland vegetation types:

- Chamise Chaparral
- Southern Mixed Chaparral

Direct impacts to special-status plant species may occur in a variety of ways, including the direct removal of plants during the course of construction. Clearing and grading associated with the placement of towers or the grading of access or spur roads may also result in the alteration of soil conditions, including the loss of native seed banks and changes to the topography and drainage of a site such that the capability of the habitat to support special-status species is impaired. Indirect impacts include the creation of conditions that are favorable for the invasion of weedy exotic species that prevent the establishment of desirable vegetation and may adversely affect wildlife. Construction on steep hillsides may also result in off-site sediment transport that may bury rare plants in adjacent habitat or alter soil conditions. Dust from road travel, grading, or other construction activities may also reduce photosynthetic capacity in plants over time or inhibit reproduction by physically coating reproductive structures or excluding insect pollinators. Soil disturbance may also result in the spread of invasive plant species. Trampling due to foot or vehicular traffic could result in soil compaction if it occurs repeatedly within any specific area; soil compaction may in turn lead to reduced water absorption and increased runoff, potentially contributing to an increase in non-native plant species, which could be more tolerant of these conditions.

The potential introduction or spread of noxious and invasive weeds would occur primarily during construction activities, but would also continue to occur during operation and maintenance phases of the Project. The introduction of noxious and invasive weeds would be related to ground disturbance from clearing and grading, expansion of access roads, construction of spur roads, and road maintenance; the use of vehicles, construction equipment, or earth materials contaminated with non-native plant seed; use of straw bales or wattles that contain seeds of non-native plant species; and enhanced public access to the Project corridor during and after construction. Additionally, weed seeds are often spread on equipment or clothing by construction or maintenance personnel. This would provide many avenues for new propagules (any part of a plant that may generate a new individual plant) to be carried into areas that previously were isolated from sources of noxious weed seeds. Direct impacts associated with the introduction of noxious weeds could occur when noxious weeds become established in an area. These invasive plant species can cause a permanent or long-lasting change to the environment by increasing vegetative cover, creating a dense layer that prevents native vegetation from germinating, altering the edaphic and hydrological conditions through nitrogen fixation (as in Spanish broom), or may drain the water table (as in giant reed). Noxious weeds can create such an unfavorable environment for wildlife that associate, mutualistic species necessary for native plant life cycles, such as seed dispersers, fossorial mammals, or pollinators, are lost from the area. Indirect impacts attributed to the colonization of noxious weeds could include a gradual decrease in natural biodiversity, as noxious weed infestations may extirpate native plant populations.

Operational impacts would also include trampling or crushing due to public use of new or improved spur roads and access roads, increased erosion, and the spread and colonization of noxious weeds. Other operational impacts include removal and trimming of vegetation during maintenance activities. Restoration activities may inadvertently lead to negative effects on special-status plant species, should they be present during construction. For instance, seed collection from native plants may result in the unintentional trampling of smaller listed species should they be present in the area, or in the removal of seeds from listed species. Effective preconstruction flagging of these species would assist in reducing the likelihood of incidental effects during seed collection or even weed removal. Weed removal may also lead to species that are not non-native being unintentionally treated or removed.

General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-24, GP-25, GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat).

TABLE 41. MITIGATION MEASURES APPLICABLE TO SEGMENT I

Wildlife Species	Mitigation Measures		Vegetation Community/ Plant Species	Mitigation Measures
Western Spadefoot Toad	AIR-2a, HYD-1, HYD-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6		Chamise Chaparral	AIR-2a, BIO-1, BIO-2, BIO-13
Burrowing Owl	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-8, BIO-16		Riversidian Sage Scrub	AIR-2a, BIO-1, BIO-2, BIO-4, BIO-6, BIO-13
California Condor	HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-7, BIO-11, BIO-18		Scrub Oak Chaparral	AIR-2a, BIO-1, BIO-2, BIO-13
Bat Species	HYD-1, BIO-1, BIO-2, BIO-4, BIO-5, BIO-6, BIO-21		Southern Mixed Chaparral	AIR-2a, BIO-1, BIO-2, BIO-13

Wildlife Species	Mitigation Measures		Vegetation Community/ Plant Species	Mitigation Measures
Southern Grasshopper Mouse	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20		Southern Riparian Scrub	AIR-2a, BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-13
American Badger	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20		Southern Sycamore Alder Riparian Woodland	AIR-2a, BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-13
Desert Kit Fox	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20		Special-status Plant Species	AIR-2a, BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-13
Coast (San Diego) Horned Lizard	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-22			
Unarmored Threespine Stickleback	HYD-1, HYD-2, BIO-2, BIO-3, BIO-4, BIO-6			
California Legless Lizard	AIR-2a, HYD-1, HYD-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-22			
Southwestern Pond Turtle	AIR-2a, HYD-1, HYD-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-22			
Coastal Rosy Boa and Two-striped Garter Snake	AIR-2a, HYD-1, HYD-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-22			
Raptors and Other Migratory Birds	HYD-1, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-8, BIO-11			
General Wildlife	BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-8, BIO-11			

TABLE 42. BIOLOGICAL RESOURCES FOUND WITHIN SEGMENT I AND POTENTIAL ACREAGE OF DISTURBANCES.

	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
USFS GIS Modeled Habitat				
Unarmoured Threespine Stickleback	1.2	1.2	0.4	0.5
Wildlife Range				
Desert Tortoise	11.1	11.1	2.5	3.0
Riparian Conservation Area				
Yes	2.3	2.3	0.5	0.6
Wildlife Corridor				
Yes	42.6	42.6	12.7	16.2
Avian Assessment Impacts				
Low	142.6	142.6	40.0	50.4
Moderate	57.4	57.4	16.0	20.1
High	7.0	7.0	2.2	2.8
Known Special Status Plant Species				
Short-joint Beavertail	0.7	0.7	0.6	0.9
Slender Mariposa Lily	7.1	7.1	2.5	3.4
Riparian Community				

	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Southern Riparian Scrub	6.4	6.4	1.5	2.8
Southern Sycamore Alder Riparian Woodland	1.9	1.9	0.5	0.9
Biological Protected Area				
Cruzan Mesa Vernal Pools SEA	2.3	2.3	0.7	0.9
San Andreas Rift Zone SEA	25.1	25.1	7.0	8.8
Vegetation				
California Annual Grassland	33.7	33.7	7.2	12.3
Chamise Chaparral	11.5	11.5	2.9	5.4
Disturbed/Developed	17.6	17.7	4.6	7.9
Riversidian Sage Scrub	100.0	107.0	24.6	42.7
Scrub Oak Chaparral	35.6	36.8	9.3	17.0
Southern Mixed Chaparral	19.5	19.5	4.7	8.5

7.1.13 Segment 2a

Segment 2a is 7 miles long and skirts around the unincorporated community of Green Valley by heading on the north side of Green Mountain. This segment has limited road access and the dominant vegetation community is Southern mixed chaparral. Several sections of the proposed segment cross or parallel Riparian Conservation Areas (RCAs). Significant impacts to RCAs are anticipated for Segment 2a and will require approximately 36 acres of temporary disturbance and 29 acres of permanent disturbance.

One site assessment was conducted for arroyo toads along Segment 2a. No arroyo toad life stages were found in 2008 or 2009, and protocol surveys conducted in spring 2010 also failed to find any sign of arroyo toad. A site assessment conducted for California red-legged frog failed to identify appropriate breeding habitat for this species within Segment 2a, and protocol surveys were not conducted.

Wildlife

Western Spadefoot Toad

Under Segment 2a, there may be direct or indirect effects to western spadefoot toad, expected to be likely to occur on this segment due to calls heard during surveys on Segment G, which Segment 2a branches off from. These calls were never verified with visual identifications. Tower construction and grading of new or existing access roads will destroy or degrade chaparral habitat that may be utilized by this species. The streambed going through South Portal Canyon may need to be crossed by construction equipment to reach transmission tower locations, resulting in possibility of streambed effects such as increased sedimentation or hydrological changes. Direct injury or mortality from crushing by equipment or vehicles may occur should individuals be present on the road or in the construction area, especially if they or their tadpoles are present in intermittent streams or temporary pools that are crossed by construction vehicles.

General practices that would reduce short-term and long-term effects to western spadefoot toad include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to western spadefoot toad include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program).

Least Bell's Vireo, Southwestern Willow Flycatcher, Western Yellow-billed Cuckoo

Under Segment 2a, there may be direct or indirect effects to least Bell's vireo, southwestern willow flycatcher, and western yellow-billed cuckoo, as they are expected to have a possibility of occurring based on availability of suitable habitat in South Portal Canyon as determined in 2008 surveys (POWER 2009a). Tower construction and grading of new and existing access roads would result in habitat and vegetation loss, as well as possible injury or mortality. Because tree trimming is a possibility to allow vehicles and equipment to pass through the creek without causing damage to trees by breaking branches, this will result in an unknown amount of habitat loss and possibly injury or mortality of adults or young. Mitigation measure BIO-14 is expected to help reduce the possibility of direct injury or mortality through preconstruction/protocol surveys for birds or nests. Further habitat degradation may occur through the deposition of dust or other contaminants onto leaves, which can reduce their vigor and reduce habitat quality in the area. Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area which may leave them open to predation. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat which could lead to reduced fitness of individuals. Furthermore, because nesting may occur outside of the officially recognized nesting season, if construction approaches any undetected nests with eggs or young, the disturbance may cause the adult(s) to abandon the nest. There is also the potential for runoff from the construction to wash down side drainages and into the main South Portal Canyon streambed, particularly following heavy rain events. This would degrade habitat and potentially stress individual birds that may be present in the canyon. Direct habitat loss would depend on the potential for any direct access into South Portal Canyon, which is not expected because the proposed corridor in this area runs alongside the top of Tule Ridge for most of its course. LADWP will consult with USFWS and implement all reasonable and prudent measures requested to protect these three species.

General practices that would reduce short-term or long-term effects to least Bell's vireo, southwestern willow flycatcher, and western yellow-billed cuckoo and to riparian habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to least Bell's vireo, southwestern willow flycatcher, and western yellow-billed cuckoo include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat). Specific measures requested by USFWS to protect these species will also be considered.

California Condor

Under Segment 2a, there may be direct or indirect impacts to California condor associated with implementation of the proposed action. This species is expected to have a possibility of occurring based on GPS data supplied by USFWS (USFWS 2008b, USFWS 2009d). Tower construction and grading of new or existing access roads will result in habitat and vegetation loss. It is not expected that the amount of vegetation and habitat loss that will occur on this segment will have a significant effect on this species, as immatures have been measured foraging over 140 miles and nesting pairs typically 31 to 44 miles in a single day (USFWS 1996b) and can likely adapt to the relatively minor change. Construction may result in trash or microtrash being left behind by the crews, even with the implementation of mitigation measure BIO-18, Protect California Condor. Any leftover trash or microtrash has the possibility to be ingested by condors, which in turn would be regurgitated for chicks to feed on, which can lead to mortality of the chicks (USFS 2008). This is a short-term impact that would be addressed by the implementation of BIO-18 and the creation of a Proper Disposal of Construction Waste Plan for the Project. As stated in mitigation measure BIO-6, road kill within the construction area would be reported within 24 hours to the USFS or BLM if on NFS or BLM land, respectively, or to the local animal control center if on non-federal lands. The construction of the towers and presence of new transmission lines may stress condors or lead to a collision depending on eventual placement and proximity to existing lines, which is anticipated to be resolved through mitigation measure BIO-18. Based on the number of sightings in this area, it is highly unlikely that any California condors are nesting near the proposed ROW (USFWS 2008b, USFWS 2009d). If condors are present in the construction area, then all construction will stop until the condor leaves the area; the biological monitor will document the occurrence and report it to USFWS (and USFS if applicable).

General practices that would reduce short-term or long-term effects to California condor include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to California condor include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-18 (Protect California condor). Formal consultation is being conducted with the USFWS to determine if any additional protection measures other than those mentioned above are necessary to protect California condors. In addition, any reasonable and prudent measures requested by the USFWS to protect the California condor will be implemented.

California Spotted Owl

Under Segment 2a, there may be direct or indirect effects to California spotted owl, expected to have a possibility of occurring due to availability of suitable habitat in South Portal Canyon as determined during 2008 and 2009 surveys (POWER 2009b). If woodland areas need to be crossed, branch trimming would likely be required to allow equipment to pass. This could lead to injury or mortality of any spotted owls that may be present in the affected trees. Habitat loss and/or degradation may also make suitable California spotted owl habitat less attractive for future use by this species, potentially requiring individuals to find and/or utilize new habitat patches. During spotted owl surveys conducted for BRRTP, suitable habitat was located along the southernmost 1.75 miles of South Portal Canyon. The new transmission line would be 0.25 mile from the bottom of the main canyon at its closest point and 0.55 mile at its farthest point. Along with the potential for any birds that may be present to be affected by the construction noise, there is also the potential for runoff from the construction to wash down side drainages and into the main South Portal Canyon streambed, particularly following heavy rain events. This would degrade habitat and potentially stress individual birds that may be present in the canyon. Direct habitat loss would depend on the potential for any direct access into South Portal Canyon, which is not expected because the proposed corridor in this area runs alongside the top of Tule Ridge for most of its course. Construction during nesting season may cause owls to leave the area entirely if they become too distressed by the activity, which could in turn lead to harm if owls are pushed into areas that are unfamiliar or unsuitable for them. Dust will likely be a factor from construction, and will without proper use of a water truck or equivalent mechanism have the potential to drift onto adjacent vegetation, degrading its quality.

General practices that would reduce short-term or long-term effects to California spotted owl include GP-8, GP-24, GP-25, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short-term or long-term effects to California spotted owl include AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-20 (Protect California spotted owl).

Townsend's Big-eared Bat and Western Red Bat

Under Segment 2a, there may be direct or indirect construction impacts to Townsend's big-eared bat and western red bat, both expected to be likely to occur based on availability of riparian habitat and trees for roosting. Tower construction and grading of new or existing access roads would result in loss of foraging habitat and degradation in habitat quality. There is little suitable habitat directly under the transmission line within the South Portal Canyon area, but there is more abundant habitat for roosting and foraging at the canyon bottom within the streambed area. Townsend's big-eared bats in particular are sensitive to human disturbance, and construction during summer months, when bat activity is higher, may cause a greater degree of disturbance to the bats, potentially leading to their abandonment of the area (Vaughan and O'Shea 1976, Piaggio 2005). This can indirectly lead to injury or mortality if it results in encounters with equipment or in decreased fitness at a new location due to unfamiliarity. The bats would likely return to the same roost the following season, if it were still available (B. Doering personal communication 2011). Mating for Townsend's big-eared bats generally occurs between October and February, with birth between May and July, while mating in western red bats occurs in late summer or early fall with birth the following summer (Reid 2006). Construction during certain time periods of these windows may be more disturbing, if bats are present.

Should a bat roost be disturbed by construction, it may result in complete abandonment of the roost, particularly for more sensitive species like pallid bats or Townsend's big-eared bats. This may lead to complete nesting failure for the season, resulting in a loss of that year's new bat births. Because bats are mainly nocturnal, any night construction would disturb them, disrupting foraging and potentially leading to injuries. Disruption of hibernation is unlikely, given the generally warm winters in Southern California. McNab (1974) suggests that only bats that are both small and do not cluster in groups can hibernate when the environmental temperature is above 14°C (57.2°F). Townsend's big-eared bats may hibernate in groups of single individuals to several hundred; in some areas, mainly in the eastern U.S., they may hibernate in groups up to several thousand (Piaggio 2005). Although winter behavior of western red bats is not well understood, it is possible that they also do not hibernate for long periods, as this species has been reported to be found foraging during the winter on warm days, even in northern California (Bolster 2005). It is likely that bats in the Project area would periodically enter states of torpor but would generally remain relatively active compared to bats in colder parts of the country, where hibernation is more feasible. Because bats are mainly nocturnal, construction on the ridge during the day is unlikely to disturb them. If construction goes into the night, there is a greater likelihood of disturbance, but bats are also unlikely to occur near construction due to the more suitable habitat lower in the canyon or elsewhere along the corridor.

General practices that would reduce short-term or long-term effects to special-status bat species include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short-term or long-term effects to special-status bat species include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-21 (Protect sensitive bat species).

Coastal Rosy Boa and Two-striped Garter Snake

Under Segment 2a, there may be direct or indirect effects to coastal rosy boa or two-striped garter snake. Coastal rosy boa is expected to be likely to occur due to a sighting by a POWER biologist during 2009 surveys and availability of chaparral habitat on this segment with a riparian area through the center, while two-striped garter snake is expected to be likely to occur based on availability of a perennial riparian stretch and surrounding chaparral habitat. Construction of new towers and access roads will result in vegetation and habitat loss. However, two-striped garter snake, which is highly dependent on water or cool, damp areas, is unlikely to be affected by construction of Segment 2a on the ridge above South Portal Canyon (Bartlett and Bartlett 2009). Coastal rosy boa, while also using riparian habitat, will more readily move away from water and may be found in burrows or under rocks or other cover. Movement of rocky areas for construction purposes may destroy additional habitat and refuges and may also result in injury or mortality if any snakes are present in between the rocks or on the ground adjacent to them. Scaring away rodents or herpetofauna could also cause reductions in food supply for any snakes that may be in or near the ROW, while scaring snakes into the open may cause increases in predation. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any snakes in the area, which may get trapped in them. Finally, individuals may be unintentionally run over by construction traffic should they be basking on the ground and undetected.

General practices that would reduce short-term or long-term effects to coastal rosy boa and two-striped garter snake include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to coastal rosy boa and two-striped garter snake include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Coast (San Diego) Horned Lizard

Under Segment 2a, there would be direct or indirect effects to coast horned lizard, expected to be present due to several individuals identified within 0.5 mile by POWER in 2009. Tower construction and grading of new or existing access roads would result in habitat and vegetation loss, and may result in direct injury or mortality of individuals. Removal of chaparral for the grading of access roads or tower sites would reduce or degrade suitable habitat for this species. Additionally, any coast horned lizards that go undetected by preconstruction surveys—in compliance with mitigation measure BIO-22—and are present under vegetation, on roads, or in burrows, may be crushed by foot traffic, vehicles, or heavy equipment. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any coast horned lizards which may fall into them. It is expected that the risk of falling into an open hole would be greater overnight, as the construction noise and vibrations would be more likely to keep any coast horned lizards from approaching too close to the active site during the day. The construction work may also lead to dispersal of individuals from the area, potentially leading to an increased risk or predation or competition if any animals are forced to relocate to unfamiliar territory.

General practices that would reduce short-term or long-term effects to coast horned lizard include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to coast horned lizard include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Mule Deer

For a discussion of potential impacts to the mule deer as a result of construction on Segment D, please refer to the Management Indicator Species report.

Mountain Lion

For a discussion of potential impacts to the mountain lion as a result of construction on Segment D, please refer to the Management Indicator Species report.

Song Sparrow

For a discussion of potential impacts to the song sparrow as a result of construction on Segment D, please refer to the Management Indicator Species report.

Other Wildlife

Common species which may occur along Segment 2a include species such as coyote, western whiptail, desert cottontail, and various unknown migratory bird species. Construction on Segment 2a may result in injury, mortality, or displacement of any of these species due to crushing or collision during grading of access roads or tower sites; loss of habitat or reduction in food availability during construction; and disturbance from construction noise and vibration leading to dispersal.

Vegetation Communities

The vegetation types of the proposed Segment 2a:

- Disturbed/Developed
- Interior Live Oak Chaparral
- Scrub Oak Chaparral
- Southern Mixed Chaparral

The 12 special-status plants that are likely to occur within Segment 2a include:

- Nevin's barberry (*Berberis nevinii*)
- Round-leaved filaree (*California macrophylla*)
- Slender mariposa lily (*Calochortus clavatus* var. *gracilis*)
- Alkali mariposa lily (*Calochortus striatus*)
- Peirson's morning-glory (*Calystegia peirsonii*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi)*
- Slender-horned spineflower (*Dodecahema leptoceras)*
- San Gabriel bedstraw (*Galium grande*)
- Ross's pitcher sage (*Lepechinia rossii*)
- Short-joint beavertail (*Opuntia basilaris* var. *brachyclada*)
- Coulter's matilija poppy (*Romneya coulteri*)
- Greata's aster (*Symphyotrichum greatae*)

The 31 special-status plants that could possibly occur within Segment 2a include:

- California androsace (*Androsace elongata* ssp. *acuta*)
- Kusche's sandwort (*Arenaria macradenia* var. *kuschei*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Palmer's mariposa lily (*Calochortus palmeri* var. *palmeri*)
- Plummer's mariposa lily (*Calochortus plummerae*)

- Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*)
- Santa Susana tarplant (*Deinandra minthornii*)
- Mojave tarplant (*Deinandra mohavensis*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Tehachapi buckwheat (*Eriogonum callistum*)
- Kern buckwheat (*Eriogonum kennedyi* var. *pinicola*)
- Delicate bluecup (*Githopsis tenella*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Urn-flowered alumroot (*Heuchera elegans*)
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)
- Southern California black walnut (*Juglans californica*)
- Fragrant pitcher sage (*Lepechinia fragrans*)
- Madera leptosiphon (*Leptosiphon serrulatus*)
- Ocellated lily (*Lilium humboldtii* ssp. *ocellatum*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Calico monkeyflower (*Mimulus pictus*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)
- Rock Creek broomrape *(Orobanche valida* ssp. *valida*)
- White rabbit-tobacco *(Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)
- Chaparral ragwort (*Senecio aphanactis)*
- *Parish's checkerbloom (Sidalcea hickmanii ssp. parishii)*
- *Laguna Moun*tains jewelflower (*Streptanthus bernardinus*)
- Southern jewelflower (*Streptanthus campestris*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- San Bernardino aster (*Symphyotrichum defoliatum*)
- Lemmon's syntrichopappus (*Syntrichopappus lemmonii*)

The 11 special-status plants that are unlikely to occur within Segment 2a include:

- San Gabriel manzanita (*Arctostaphylos gabrielensis*)
- Braunton's milk-vetch (*Astragalus brauntonii*)
- Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*)
- San Gabriel River dudleya (*Dudleya cymosa* ssp. *crebrifolia*)
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- California satintail (*Imperata brevifolia*)
- Rock monardella (*Monardella viridis* var. *saxicola*)
- Ojai navarretia (*Navarretia ojaiensis*)
- Baja navarretia (*Navarretia peninsularis*)
- Gairdner's yampah (*Perideridia gairdneri* ssp. *gairdneri*)
- Southern Mountains skullcap (*Scutellaria bolanderi ssp. austromontana*)

Direct impacts to special-status plant species may occur in a variety of ways, including the direct removal of plants during the course of construction. Clearing and grading associated with the placement of towers or the grading of access or spur roads may also result in the alteration of soil conditions, including the loss of native seed banks and changes to the topography and drainage of a site such that the capability of the habitat to support special-status species is impaired. Indirect impacts include the creation of conditions that are favorable for the invasion of weedy exotic species that prevent the establishment of desirable vegetation and may adversely affect wildlife. Construction on steep hillsides may also result in off-site sediment transport that may bury rare plants in adjacent habitat or alter soil conditions. Dust from road travel, grading, or other construction activities may also reduce photosynthetic capacity in plants over time or inhibit reproduction by physically coating reproductive structures or excluding insect pollinators. Soil disturbance may also result in the spread of invasive plant species. Trampling due to foot or vehicular traffic could result in soil compaction if it occurs repeatedly within any specific area; soil compaction may in turn lead to reduced water absorption and increased runoff, potentially contributing to an increase in non-native plant species, which could be more tolerant of these conditions.

The potential introduction or spread of noxious and invasive weeds would occur primarily during construction activities, but would also continue to occur during operation and maintenance phases of the Project. The introduction of noxious and invasive weeds would be related to ground disturbance from clearing and grading, expansion of access roads, construction of spur roads, and road maintenance; the use of vehicles, construction equipment, or earth materials contaminated with non-native plant seed; use of straw bales or wattles that contain seeds of non-native plant species; and enhanced public access to the Project corridor during and after construction. Additionally, weed seeds are often spread on equipment or clothing by construction or maintenance personnel. This would provide many avenues for new propagules (any part of a plant that may generate a new individual plant) to be carried into areas that previously were isolated from sources of noxious weed seeds. Direct impacts associated with the introduction of noxious weeds could occur when noxious weeds become established in an area. These invasive plant species can cause a permanent or long-lasting change to the environment by increasing vegetative cover, creating a dense layer that prevents native vegetation from germinating, altering the edaphic and hydrological conditions through nitrogen fixation (as in Spanish broom), or may drain the water table (as in giant reed). Noxious weeds can create such an unfavorable environment for wildlife that associate, mutualistic species necessary for native plant life cycles, such as seed dispersers, fossorial mammals, or pollinators, are lost from the area. Indirect impacts attributed to the colonization of noxious weeds could include a gradual decrease in natural biodiversity, as noxious weed infestations may extirpate native plant populations.

Operational impacts would also include trampling or crushing due to public use of new or improved spur roads and access roads, increased erosion, and the spread and colonization of noxious weeds. Other operational impacts include removal and trimming of vegetation during maintenance activities. Restoration activities may inadvertently lead to negative effects on special-status plant species, should they be present during construction. For instance, seed collection from native plants may result in the unintentional trampling of smaller listed species should they be present in the area, or in the removal of seeds from listed species. Effective preconstruction flagging of these species would assist in reducing the likelihood of incidental effects during seed collection or even weed removal. Weed removal may also lead to species that are not non-native being unintentionally treated or removed.

General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-24, GP-25, GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat).

Table 43. Mitigation Measures Applicable to Segment 2a

Wildlife Species	Mitigation Measures		Vegetation Community/Plant Species	Mitigation Measures
Western Spadefoot Toad	AIR-2a, HYD-1, HYD-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6		Scrub Oak Chaparral	AIR-2a, BIO-1, BIO-2, BIO-13

Wildlife Species	Mitigation Measures		Vegetation Community/Plant Species	Mitigation Measures
Least Bell's Vireo, Southwestern Willow Flycatcher, Western Yellow-billed Cuckoo	AIR-2a, HYD-1, HYD-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-8, BIO-11, BIO-14		Interior Live Oak Chaparral	AIR-2a, BIO-1, BIO-2, BIO-13
California Condor	HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-7, BIO-11,BIO-18		Southern Mixed Chaparral	AIR-2a, BIO-1, BIO-2, BIO-13
California Spotted Owl	AIR-2a, BIO-1, BIO-2, BIO-5, BIO-6, BIO-8, BIO-11, BIO-20		Special-status Plant Species	AIR-2a, BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-13
Townsend's Big-eared Bat and Western Red Bat	HYD-1, BIO-1, BIO-2, BIO-4, BIO-5, BIO-6, BIO-21			
Coastal Rosy Boa and Two-striped Garter Snake	AIR-2a, HYD-1, HYD-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-22			
Coast (San Diego) Horned Lizard	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-22			
Raptors and Other Migratory Birds	HYD-1, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-8, BIO-11			
General Wildlife	BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-8, BIO-11			

TABLE 44. BIOLOGICAL RESOURCES FOUND WITHIN SEGMENT 2A AND POTENTIAL ACREAGE OF DISTURBANCES.

	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
USFS GIS Modeled Habitat				
California spotted owl	3.9	3.9	2.8	4.0
Riparian Conservation Area				
Yes	9.6	10.2	5.64	8.03
Vegetation				
Disturbed/Developed	10.7	10.9	2.5	4.7
Interior Live Oak Chaparral	5.2	5.6	1.1	2.1
Scrub Oak Chaparral	3.1	3.2	0.8	1.5
Southern Mixed Chaparral	19.3	21.7	3.6	6.1

7.2 NEW 230 KV CIRCUIT

Between the proposed Haskell Canyon Switching Station and the existing Castaic Power Plant, LADWP proposes the addition of approximately 12 miles of a new 230 kV transmission circuit onto existing Castaic – Olive 230 kV Transmission Line structures (towers 1-1 through 12-1). The 12-mile segment is in the southern portion of Segment D.

7.2.1 Segment J

Segment J is approximately 12 miles long. About 50% of the segment is Riversidian sage scrub, while the other half is composed of chamise chaparral. A small portion of the segment, mainly where it crosses over Castaic Lake, is considered disturbed/developed; several riparian areas cross this segment as well, including the southern coast live oak riparian forest, southern cottonwood willow riparian forest, and southern sycamore alder riparian woodland communities. Disturbance observed in Segment J include off-highway vehicle (OHV) use, Castaic Dam maintenance, and weed invasion.

Wildlife

California Red-legged Frog

The only probable California red-legged frog detected during the 2008 and 2009 protocol surveys was a tadpole found on April 8, 2008 at Site Assessment #1 under the location where Segment J crosses San Francisquito Creek. This tadpole was identified using a hand lens, based on several traits including eyes set well in from the outside margin of the body when viewed from above, and a line of small, light dots in a row from the eye down the back where the dorsolateral fold would develop. However, because of the lack of any other observed potential California red-legged frog tadpoles combined with the general inadequacy of the site for this species' breeding requirements, it is likely that the tadpole washed downstream from the known occupied habitat approximately 4 miles upstream. Due to a sharp rise in precipitation in the Saugus area in the two months preceding the identification of this tadpole, this is a possible scenario (CDEC 2010). In this case, because the habitat at this location is not normally suitable to support this species, it is unlikely to be present, particularly because the site was observed to be dry during subsequent visits. However, should this species be present in this section of San Francisquito Creek again, several construction impacts could occur. Because the tadpole was present in a portion of the creek that is adjacent to a residence and crossing the creek is the only way for the residents to reach their home, this area likely experiences daily vehicle traffic, resulting in periodic disruption of water and stirring of sediment in the stream's substrate. Increasing the number of vehicles passing through this area by adding construction vehicles and equipment would increase the amount of sedimentation in the creek in this area and increase the risk of habitat degradation along the creek through spread of non-native plant seeds around the banks and vehicular fluid spills. Daily disturbance would reduce the likelihood of frogs being present or nesting in the immediate road crossing, but if egg masses, tadpoles, or frogs are present, then the risk of crushing would be increased. Project mitigation would require a qualified biologist to conduct surveys if habitat or conditions are suitable for California red-legged frogs to be present, and if found in the vicinity of the stream crossing, the crossing would be excluded from access while inundated. No other areas were found on this segment that had the potential to support the California red-legged frog.

General practices that would reduce short-term and long-term effects to California red-legged frog and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to California red-legged frog and its habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-24 (Protect arroyo toad and California red-legged frog).

Arroyo Toad

No arroyo toads are found within the 500-foot impact corridor or access roads that would be used during construction of the new 230 kV circuit on Segment J. Designated critical habitat is located within Castaic Creek just northeast of the Castaic Power Plant in an area known as Unit 6: Upper Santa Clara River

Basin (50 CFR part 17). The Project would not span over this area, and access roads would not cross this area. The boundaries of Unit 6 extend to within 0.16 mile from the proposed new 230 kV circuit ROW. Unit 6 is also upstream from the proposed new 230 kV circuit ROW. There may be indirect construction effects to arroyo toad, as a breeding population in Castaic Creek, which is just northeast of where the new 230 kV circuit route ends at Castaic Power Plant, is present. Because adult anurans are known to be active nocturnally and not usually diurnally, it is unlikely that any toads would be present on the surface during construction, assuming regular hours. Toads may be aestivating within the construction area, but this is unlikely given that observations have shown that inland populations of arroyo toads are more likely to aestivate directly within the streambed rather than dispersing into distant upland habitat (Ramirez 2007). Habitat loss would not occur where this population is, since construction would not enter the area of occupied habitat in Castaic Creek or critical habitat, which is approximately 0.16 mile from the 230 kV Circuit ROW.

Indirect impacts may occur as a result from sedimentation. A watershed analysis was conducted for BRRTP (see the BRRTP Water Resources Technical Report in Volume IV of the EIS/EIR, USFS/BLM/LADWP 2011, for details on how this analysis was conducted). The new 230 kV circuit would affect the Middle Castaic Creek and Lower Castaic Creek subwatersheds with a combined area of 42,212 acres. Estimated average baseline annual erosion for these subwatersheds is 48.55 tons/acre/year. With construction of the new 230 kV circuit, predicted average annual erosion would be 49 tons/acre/year, an increase of 0.95 percent over baseline. The ground disturbance activities could potentially alter drainage patterns within the work areas and result in soil erosion, leading to increased sedimentation. However, with the implementation of mitigation measures HYD-01 and HYD-02, the potential impacts (less than 1% over baseline) resulting from substantial drainage pattern alteration is considered less than significant for CEQA.

South of the Castaic Reservoir along the 230 kV circuit, marginal habitat was identified within Charlie Canyon; due to its marginal quality, lack of water, and jurisdiction outside of the ANF, this area was not surveyed. This habitat may be driven through for construction access to tower sites on the northern side of the canyon. It is unlikely that habitat in the streambed would be directly affected beyond changes in the microhabitat resulting from equipment driving through the streambed crossings. If water is present, this would result in increased sedimentation and changes in hydrology. Based on the habitat assessment and known USFWS habitat locations, arroyo toads are not expected to be present in this area.

General Practices that would reduce short- and long-term effects to the arroyo toad and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to the arroyo toad and its habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-24 (Protect arroyo toad and California red-legged frog).

Western Spadefoot Toad

Under Segment J, there may be direct or indirect effects to western spadefoot toad, expected to be present on this segment due to several sightings within one mile of this segment, suitable grassland and/or chaparral habitat located throughout the segment and sandy riparian habitat around Charlie Canyon and Castaic Creek, and aural identification of a spadefoot toad call during POWER's 2009 surveys (CDFG 2010, POWER 2010a). Tower construction and grading of new or existing access roads will destroy or degrade grassland or shrubby habitat that may be utilized by this species. The streambed in Charlie

Canyon may still experience effects from vehicular traffic, such as increased sedimentation or hydrological changes, if wet at the time of construction. Direct injury or mortality from crushing by equipment or vehicles may occur should individuals be present on the road or in the construction area.

General practices that would reduce short-term and long-term effects to western spadefoot toad include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to western spadefoot toad include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program).

Peregrine Falcon and Bald Eagle

Under Segment J, there may be direct or indirect effects to peregrine falcon or bald eagle. Peregrine falcon and bald eagle are both expected to have possibilities of occurring on this segment due to the abundant open water around Castaic Lake and Castaic Lagoon. There are also nesting opportunities for falcons with the buildings and structures around the Castaic Lake/Lagoon region. Construction of new towers and grading of new or existing access roads would result in vegetation and habitat loss to these species. Direct injury or mortality from construction is not expected based on the lack of recorded sightings of these species. Should any of them nest near the proposed ROW they may be displaced by construction disturbance depending on the amount of ambient disturbance in the area, which is greater around Castaic Lake/Lagoon. If this is the case, adults and/or their young would likely need to relocate, which could possibly result in indirect injury or mortality as they move to inhabit new locations. Power line design could result in injury or mortality to raptors that are flying through the area or even perching on the towers, and appropriate tower design and protective measures will need to be enforced to prevent this. Birds, particularly raptors, are also known to perch, roost, or even nest on transmission structures, and may collide with power lines upon landing in or leaving a water body (APLIC 2006).

General practices that would reduce short-term or long-term effects to peregrine falcon and bald eagle include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to peregrine falcon and bald eagle include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-17 (Protect the bald eagle and golden eagle).

California Condor

Under Segment J, there would be direct or indirect impacts to California condor associated with implementation of the proposed action. This species is expected to be present based on GPS data supplied by USFWS (USFWS 2008b, USFWS 2009d). Tower construction and grading of new or existing access roads will result in habitat and vegetation loss. It is not expected that the amount of vegetation and habitat loss that will occur on this segment will have a significant effect on this species, as immatures have been measured foraging over 140 miles and nesting pairs typically 31 to 44 miles in a single day (USFWS 1996b) and can likely adapt to the relatively minor change. Construction may result in trash or microtrash being left behind by the crews; however, with the implementation of mitigation measure BIO-18, the potential impact to condors from microtrash would be effectively avoided. As stated in mitigation measure BIO-6, road kill within the construction area would be reported within 24 hours to the USFS or BLM if on NFS or BLM land, respectively, or to the local animal control center if on non-federal lands. Construction presence around the towers may stress condors, which is anticipated to be resolved through mitigation measures described in BIO-18. LADWP would also implement any reasonable and prudent measures that the USFWS develops for the California condors during the consultation process. If condors are present in the construction area then all construction will stop until the condor leaves the area; the biological monitor will document the occurrence and report it to USFWS (and USFS if applicable).

General practices that would reduce short-term or long-term effects to California condor include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to California condor include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-18 (Protect California condor). Formal consultation is being conducted with the USFWS to determine if any additional protection measures other than those mentioned above are necessary to protect California condors. In addition, any reasonable and prudent measures requested by the USFWS to protect the California condor will be implemented.

Loggerhead Shrike

Under Segment J, there may be direct or indirect effects to loggerhead shrike, expected to have a possibility of occurring due to availability of habitat and to a potential sighting by a non-ornithologist POWER biologist in fall 2009. Tower construction and grading of new or existing access roads would result in habitat and vegetation loss. This would cause habitat degradation which may make the area less appealing to loggerhead shrike individuals. It is expected that preconstruction surveys and/or biological monitoring will locate any nests within shrubs or trees in the area, although if any nests are not located, this could result in injury or mortality of individuals. Construction noise and human presence may cause birds to disperse from the area, potentially abandoning a nest if any birds are nesting nearby during construction. Nest abandonment can lead to indirect injury or mortality of the young.

General practices that would reduce short-term or long-term effects to loggerhead shrike include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to loggerhead shrike include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Coastal California Gnatcatcher

Under Segment J, there may be direct or indirect construction impacts to coastal California gnatcatcher, expected to be present due to several individuals identified on both sides of Castaic Lake during 2010 and 2011 BRRTP bird use count surveys conducted by POWER, one recorded sighting within 1.3 miles of the proposed ROW (CDFG 2011), and suitable coastal California gnatcatcher habitat identified during 2008 habitat surveys (POWER 2010b). Construction-related impacts could include increased noise, traffic, or other human activities that would potentially disturb individual coastal California gnatcatchers that are foraging or passing through the Project area. These impacts would be localized and temporary. Because of the location of habitat patches identified in 2008 and those where individuals were located in 2010 and 2011, it is possible that some of these could be destroyed or degraded by construction, as some are directly within the corridor or nearby. No designated critical habitat for this species is located along the proposed Segment J corridor. Preconstruction surveys would be conducted to determine usage of these areas by coastal California gnatcatchers, and appropriate temporal, spatial, and/or noise limitations would be imposed on construction in accordance with mitigation measure BIO-15. Potential indirect effects to coastal California gnatcatchers from Project construction could include increased vulnerability to predation for individuals that move outside of their specific habitat patches during construction, possible inability to effectively forage due to construction-related stress or unfamiliarity with a new area, and habitat degradation resulting from the spread and establishment of non-native species or the deposition of dust onto surrounding vegetation as a result of vehicles or reestablishment of access roads if necessary. Human presence following construction is not expected to noticeably increase, as construction in these areas would all be conducted on existing transmission line towers.

General practices that would reduce short-term or long-term effects to coastal California gnatcatcher include GP-8, GP-24, GP-33, GP-34, GP-35, GP-41, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term and long-term effects to coastal California gnatcatcher include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-15 (Protect coastal California gnatcatcher and its habitat).

California Spotted Owl

Under Segment J, there may be direct or indirect effects to California spotted owl, expected to have a possibility of occurring due to availability of suitable habitat in Charlie Canyon and Dry Canyon as determined during 2008 and 2009 surveys (POWER 2009b). Habitat degradation and/or loss will occur for this species in Charlie Canyon, as the areas that were determined to be suitable habitat during surveys are located alongside the road, possibly resulting in dust deposition and/or branch trimming of trees along this area. This could lead to injury or mortality of any spotted owls that may be present in the affected trees. Habitat loss and/or degradation may also make suitable California spotted owl habitat less attractive for future use by this species, potentially requiring individuals to find and/or utilize new habitat patches. Construction during nesting season may cause owls to leave the area entirely if they become too distressed by the activity, which could in turn lead to harm if owls are pushed into areas that are unfamiliar or unsuitable for them. Implementation of Forest Plan Standard S20 would restrict construction within 0.25 mile of any California spotted owl nest site or activity center with an unknown nesting status during the breeding season (February 1 to August 15) unless USFS protocol surveys determine that spotted owls are absent. This would reduce impacts to nesting California spotted owls and their young. This standard is implemented into mitigation measure BIO-20 (Protect California spotted owl).

General practices that would reduce short-term or long-term effects to California spotted owl include GP-8, GP-24, GP-25, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short-term or long-term effects to California spotted owl include AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-20 (Protect California spotted owl).

Least Bell's Vireo

Least Bell's vireos may be present within the Project area around Castaic Lake and Castaic Lagoon. A population of at least 15 individuals was spotted in this area in 2005 over ten separate visits (CDFG 2010). The location of this population is within 0.5 mile of Segment J. However, the transmission line is approximately 375 feet higher in elevation—and set back from the top of a hill—than the patch of suitable habitat where the vireos were previously identified, which is at the bottom of a canyon. It is not expected that any vegetation removal in this area would be required, as the corridor is not close enough and the paved road would likely be maintained by the management of the Castaic Lake State Recreation Area, of which this road is a part. There may be small amounts of tree trimming required on the edge of the road if equipment cannot pass without hitting branches. While individual least Bell's vireos may be affected by the noise of passing vehicles if Project equipment enters and exits the ROW via the paved road that passes by the vireo site, further effects to least Bell's vireos or their habitat are not expected in this area due to its topographical features. Because the paved road that passes adjacent to the vireo sighting location is a public road within the Castaic Lake State Recreation Area, birds in the area likely have become acclimated to periodic disturbances from vehicular traffic on this roadway. Should construction vehicles enter and exit the ROW in this area from a different road, of which there are several in the area that could be used if necessary, direct impacts from construction to any vireos which may be present are expected to be negligible. The population of least Bell's vireo in this area was last recorded in 2005; preconstruction surveys would be conducted in this area to determine if this species is still present. Should individuals be detected, appropriate follow-up protocols according to mitigation measure BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat) would be implemented.

Indirect impacts to least Bell's vireo could occur from Segment J due to habitat degradation. Construction vehicles and equipment could transport non-native plant seeds on their tires or carriages and cause non-native plant species to spread into areas where they may be less abundant or not present, such as within the areas that contain suitable habitat for least Bell's vireo. Construction on towers or grading of existing access roads may also result in dust deposition onto surrounding vegetation, which could affect the ability or effectiveness of plants to photosynthesize. Long-term periodic human presence and use of access roads by maintenance or security vehicles may continue to result in habitat degradation as described above, but the effects would be relatively minor, as most activity would likely consist of passing by while patrolling the ROW, and should not result in off-road activity—such as foot traffic—unless a problem is discovered.

General practices that would reduce short-term or long-term effects to least Bell's vireo and to riparian habitat include GP-3, GP-4, GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to least Bell's vireo include HYD-1 (Use of existing water crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat).

Pallid Bat, Townsend's Big-eared Bat, Western Mastiff Bat, and Western Red Bat

Under Segment J, there may be direct or indirect construction impacts to pallid bat, Townsend's big-eared bat, western mastiff bat, and western red bat. Pallid bat, Townsend's big-eared bat, and western mastiff bat are expected to have possibilities of occurring based on the availability of suitable habitat on Segment J, such as roosting opportunities in the existing power lines, buildings around Castaic Lake and Lagoon, and rocky outcrops near Castaic Power Plant; foraging opportunities in the chaparral and grasslands along this segment; and abundant water around Castaic Lake and Lagoon. Construction work on the new 230 kV circuit is not expected to notably reduce suitable habitat for the bat species named above. Foraging habitat may be degraded as a result of the spread of non-native species, dust deposition, or soil compaction, but habitat effects are expected to be relatively low due to the probable low amount of disturbance that will result from adding the additional conductor to the existing transmission lines. Should spur roads need to be constructed or reestablished, there may be habitat loss or degradation in isolated locations. Rocky roosting habitat is minimal along this area. Although the western side of San Francisquito Canyon has rocky habitat, this is primarily several miles north of this corridor. The few buildings located directly under or adjacent to this ROW are primarily homes in San Francisquito Canyon, and the likelihood of bats roosting in them is low; if bats are present, temporary construction effects would likely not be significantly more disturbing than daily residential activity. However, if bats are present roosting around the building or yard that are approximately two linear miles south of the northern end of this corridor, which are not public areas, there may be a greater disturbance from construction presence on nearby towers, potentially causing bats to vacate the area.

General practices that would reduce short-term or long-term effects to special-status bat species include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short-term or long-term effects to special-status bat species include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-21 (Protect sensitive bat species).

San Diego Black-tailed Jackrabbit

Under Segment J, there may be direct or indirect effects to San Diego black-tailed jackrabbit, expected to be present due to a recorded sighting within 0.25 mile of the proposed ROW (CDFG 2010). Tower construction and grading of new or existing access roads would cause habitat degradation and destruction for this species. Because black-tailed jackrabbits are usually nocturnal, construction at night would result in foraging disturbance and possibly injury or mortality from equipment (Reid 2006). During the day they sleep in depressions under bushes, and if for any reason one should be caught suddenly and unexpectedly by construction, injury or mortality could again occur (Reid 2006). Although birthing occurs year-round, young are able to run within a couple hours of birth and would be less likely to be harmed or killed by construction than species whose young can take several weeks to become independently mobile (Reid 2006). However, dispersing young during the day could leave them open to increased predation risk.

General practices that would reduce short-term or long-term effects to San Diego black-tailed jackrabbit include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to San Diego black-tailed jackrabbit include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

California Legless Lizard

Under Segment J, there may be direct or indirect construction impacts to California legless lizard, expected to have a possibility of occurring based on availability of suitable habitat within Dry Canyon and Charlie Canyon. This species is known to reside in moist areas, and apparently requires high moisture content in the soil it inhabits. While both of these streambeds are intermittent, the presence of riparian vegetation in each (such as mulefat) would indicate that the soil may be moist enough to support this species. Direct injury or mortality of individuals of this species is possible because it hides under leaf litter and other cover, where it would not be seen. Encroachment near riparian areas would be most likely to damage or kill individuals of this species, although open chaparral and even desert scrub may be used by it (Stebbins 2003). In areas where construction is present in habitat that could support this species or if vehicles pass through areas of suitable habitat, they may crush individuals or compact the soil, resulting in long-term reduced habitat quality for this fossorial species. This would also be a concern because legless lizards are primarily active during the morning and evening (Fellers 2009) and would generally be inactive and basking throughout the day, leaving individuals more open to injury or mortality through construction. Exposure on the surface during the day or by lighting at night may subject it to predation. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any California legless lizards in the area, which may get trapped in them.

General practices that would reduce short-term or long-term effects to California legless lizard include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to California legless lizard include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Coast (San Diego) Horned Lizard

Under Segment J, there would be direct or indirect effects to coast horned lizard, expected to be present due to two sightings within 1.5 miles of the proposed ROW (CDFG 2010). Tower construction and grading of new or existing access roads would result in habitat and vegetation loss, and may result in direct injury or mortality of individuals. Removal of chaparral for the grading of access roads or tower sites would reduce or degrade suitable habitat for this species. Additionally, any coast horned lizards that go undetected by preconstruction surveys—in compliance with mitigation measure BIO-22—and are present under vegetation, on roads, or in burrows, may be crushed by foot traffic, vehicles, or heavy equipment. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any coast horned lizards which may fall into them. It is expected that the risk would be greater overnight, as the construction noise and vibrations would be more likely to keep any coast horned lizards from approaching too close to the active site. The construction work may also lead to dispersal of individuals from the area, potentially leading to an increased risk or predation or competition if any animals are forced to relocate to unfamiliar territory.

General practices that would reduce short-term or long-term effects to coast horned lizard include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to coast horned lizard include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Coastal Rosy Boa and Two-striped Garter Snake

Under Segment J, there may be direct or indirect effects to coastal rosy boa or two-striped garter snake. Coastal rosy boa is expected to be likely to occur due to availability of suitable vegetative habitat, rocky outcrops, and intermittent streambeds, while two-striped garter snake is expected to have a possibility of occurring based on two individuals identified approximately three miles away by POWER biologists in

2009 with a lack of known perennial streambeds in the area. Moving rocks may also result in injury or mortality if any snakes are present in between the rocks or on the ground adjacent to them. Excessive disturbance to washes or streambeds may have additional impacts to habitat, as these snake species are attracted to water sources, particularly two-striped garter snake (Stebbins 2003). Scaring away rodents or herpetofauna could also cause reductions in food supply for any snakes that may be in or near the ROW, while scaring snakes into the open may cause increases in predation. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any snakes in the area, which may get trapped in them. Finally, individuals may be unintentionally run over by construction traffic should they be basking on the ground and undetected.

General practices that would reduce short-term or long-term effects to coastal rosy boa and two-striped garter snake include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to coastal rosy boa and two-striped garter snake include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

Arroyo Chub

Under Segment J, there may be direct or indirect effects to arroyo chub, expected to have a possibility of occurring along Segment J due to a known population within the Dam Reach of San Francisquito Creek. The ANF Land Management Plan (USFS 2005) considers this species to be present within San Francisquito Creek, although it is unclear if it is believed or known to be present anywhere in San Francisquito Creek near where this segment crosses. Direct impacts to arroyo chub could include crushing or disruption of life history during construction by vehicles or equipment should they cross San Francisquito Creek and should it be present, along with habitat degradation. Project equipment and vehicles could spill vehicular fluids into the water or could carry non-native plant seeds in their tires or on their carriages, potentially resulting in the spread of non-native plant species if the seeds fall off and propagate in new areas, such as suitable arroyo chub habitat. Repeated stream crossings may also disrupt or destroy suitable breeding or spawning habitat.

General practices that would reduce short-term or long-term effects to arroyo chub or its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to arroyo chub include HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activites and vehicle operation ould be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program).

Mule Deer

For a discussion of potential impacts to the mule deer as a result of construction on Segment D, please refer to the Management Indicator Species report.

Mountain Lion

For a discussion of potential impacts to the mountain lion as a result of construction on Segment D, please refer to the Management Indicator Species report.

Song Sparrow

For a discussion of potential impacts to the song sparrow as a result of construction on Segment D, please refer to the Management Indicator Species report.

Avian Risk

Segment J poses a low, medium, or high risk to avian species depending on specific sections of the segment, according to the Avian Risk Assessment. All risk factors except four—lines is a new transmission corridor, line crosses wetland, line crosses reservoir or lake, and line crosses between two distinct habitat usage types—were present in various locations throughout this segment. These include a wetland being within 0.5 mile of the transmission line; a reservoir or lake within 0.5 mile of the transmission line; the line crossing a valley or canyon perpendicularly; the line crossing perpendicular to prevailing winds; the line crossing through an area with wind speeds on average greater than 16.8 mph; a water body with established emergent vegetation being within 0.5 mile of the transmission line; a line convergence or divergence within 0.5 mile of the transmission line; a 40+% slope within 0.5 mile of the transmission line; a nearby ridgeline; a ridge crossing perpendicular to the line; and a valley nearby to the line. Wetlands, reservoirs, and lakes tend to create congregations of birds that can collide with lines during landing or takeoff, while lines crossing perpendicular to valleys or canyons pose risks to avian species because birds often fly through valley or canyons. Also, winds that are prevailingly perpendicular to transmission lines can blow birds into the lines, while higher wind speeds are believed to result in lower numbers of avian migrants. Converging and diverging transmission lines can increase collision risk by causing birds to perform multiple evasive maneuvers. Lines placed near steep slopes are risky because birds such as California condors and peregrine falcons nest on slopes and cliff faces, which will likely increase the risk of collision when coming or going from the nest. Crossing near or perpendicular to ridgelines is a risk factor because raptors use thermal updrafts to soar near ridges, and may collide with transmission lines if they are flying too close. Potential effects as a result of these factors include collision and electrocution of birds at transmission lines. GP-8 and GP-11 would protect local and migratory bird species that may occur and reduce short-term and long-term effects to migratory bird species in the BRRTP area, respectively, while applicable mitigation measures include BIO-3 (Incorporate riparian area avoidance and permit measures) and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines).

Vegetation Communities

The vegetation types of the proposed Segment J include:

- Riversidian Sage Scrub
- Chamise Chaparral
- Disturbed/Developed
- Southern Coast Live Oak Riparian Forest
- Southern Cottonwood Willow Riparian Forest
- Southern Sycamore Alder Riparian Woodland

No special-status plants were found within the proposed Segment J.

Prior to field surveys, 53 special-status plant species were determined to have potential to occur within the proposed Segment J, including nine species with moderate potential to occur and 12 species with low to very low potential to occur. Suitable habitat for these species may occur within chamise chaparral and Riversidian sage scrub vegetation within Segment J. See Table 7 and species accounts for more information. All of these were searched for during 2010 protocol-level surveys on ANF lands at a time of year when they are identifiable in the field, and no individuals of these species were found within Segment J.

The 15 special-status plants that are likely to occur within Segment J include:

- Nevin's barberry (*Berberis nevinii*)
- Slender mariposa lily (*Calochortus clavatus* var. *gracilis*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Peirson's morning-glory (*Calystegia peirsonii*)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi)*
- Slender-horned spineflower (*Dodecahema leptoceras)*
- San Gabriel bedstraw (*Galium grande*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Ross's pitcher sage (*Lepechinia rossii*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Ojai navarretia (*Navarretia ojaiensis*)
- Short-joint beavertail (*Opuntia basilaris* var. *brachyclada*)
- Chaparral ragwort (*Senecio aphanactis*)
- Greata's aster (*Symphyotrichum greatae*)

The 22 special-status plants that could possibly occur within Segment J include:

- California androsace (*Androsace elongata* ssp. *acuta*)
- Braunton's milk-vetch (*Astragalus brauntonii*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Alkali mariposa lily (*Calochortus striatus*)
- Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*)
- Santa Susana tarplant (*Deinandra minthornii*)
- Mojave tarplant (*Deinandra mohavensis*)
- Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*)
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)
- California satintail (*Imperata brevifolia*)
- Southern California black walnut (*Juglans californica*)
- Pale-yellow layia (*Layia hetertricha*)
- Ocellated lily (*Lilium humboldtii* ssp. *ocellatum*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)
- Gairdner's yampah (*Perideridia gairdneri ssp. gairdneri*)
- White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)
- Coulter's matilija poppy (*Romneya coulteri*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- San Bernardino aster (*Symphyotrichum defoliatum*)
- Lemmon's syntrichopappus (*Syntrichopappus lemmonii*)

The 15 special-status plants that are unlikely to occur within Segment J include:

- Kusche's sandwort (*Arenaria macradenia var. kuschei)*
- San Gabriel Manzanita (*Arctostaphylos gabrielensis*)
- Palmer's mariposa lily (*Calochortus palmeri var. palmeri)*
- San Gabriel River dudleya (*Dudleya cymosa* ssp. *crebrifolia*)
- Tehachapi buckwheat (*Eriogonum callistum*)
- Kern buckwheat (*Eriogonum kennedyi* var. *pinicola*)
- Delicate bluecup (*Githopsis tenella*)
- Fragrant pitcher sage (*Lepechinia fragrans*)

- Rock monardella (*Monardella viridis* var. *saxicola*)
- Baja navarretia (*Navarretia peninsularis*)
- Rock Creek broomrape (*Orobanche valida* ssp. *valida*)
- Southern Mountains skullcap (*Scutellaria bolanderi ssp. austromontana*)
- Parish's checkerbloom (*Sidalcea hickmanii ssp. parishii*)
- Laguna Mountains jewelflower (*Streptanthus bernardinus*)
- Southern jewelflower (*Streptanthus campestris*)

Direct impacts to special-status plant species may occur in a variety of ways, including the direct removal of plants during the course of construction. Clearing and grading associated with the placement of towers or the grading of access or spur roads may also result in the alteration of soil conditions, including the loss of native seed banks and changes to the topography and drainage of a site such that the capability of the habitat to support special-status species is impaired. Indirect impacts include the creation of conditions that are favorable for the invasion of weedy exotic species that prevent the establishment of desirable vegetation and may adversely affect wildlife. Construction on steep hillsides may also result in off-site sediment transport that may bury rare plants in adjacent habitat or alter soil conditions. Dust from road travel, grading, or other construction activities may also reduce photosynthetic capacity in plants over time or inhibit reproduction by physically coating reproductive structures or excluding insect pollinators. Soil disturbance may also result in the spread of invasive plant species. Trampling due to foot or vehicular traffic could result in soil compaction if it occurs repeatedly within any specific area; soil compaction may in turn lead to reduced water absorption and increased runoff, potentially contributing to an increase in non-native plant species, which could be more tolerant of these conditions.

The potential introduction or spread of noxious and invasive weeds would occur primarily during construction activities, but would also continue to occur during operation and maintenance phases of the Project. The introduction of noxious and invasive weeds would be related to ground disturbance from clearing and grading, expansion of access roads, construction of spur roads, and road maintenance; the use of vehicles, construction equipment, or earth materials contaminated with non-native plant seed; use of straw bales or wattles that contain seeds of non-native plant species; and enhanced public access to the Project corridor during and after construction. Additionally, weed seeds are often spread on equipment or clothing by construction or maintenance personnel. This would provide many avenues for new propagules (any part of a plant that may generate a new individual plant) to be carried into areas that previously were isolated from sources of noxious weed seeds. Direct impacts associated with the introduction of noxious weeds could occur when noxious weeds become established in an area. These invasive plant species can cause a permanent or long-lasting change to the environment by increasing vegetative cover, creating a dense layer that prevents native vegetation from germinating, altering the edaphic and hydrological conditions through nitrogen fixation (as in Spanish broom), or may drain the water table (as in giant reed). Noxious weeds can create such an unfavorable environment for wildlife that associate, mutualistic species necessary for native plant life cycles, such as seed dispersers, fossorial mammals, or pollinators, are lost from the area. Indirect impacts attributed to the colonization of noxious weeds could include a gradual decrease in natural biodiversity, as noxious weed infestations may extirpate native plant populations.

Operational impacts would also include trampling or crushing due to public use of new or improved spur roads and access roads, increased erosion, and the spread and colonization of noxious weeds. Other operational impacts include removal and trimming of vegetation during maintenance activities. Restoration activities may inadvertently lead to negative effects on special-status plant species, should they be present during construction. For instance, seed collection from native plants may result in the unintentional trampling of smaller listed species should they be present in the area, or in the removal of seeds from listed species. Effective preconstruction flagging of these species would assist in reducing the likelihood of incidental effects during seed collection or even weed removal. Weed removal may also lead to species that are not non-native being unintentionally treated or removed.

General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-24, GP-25, GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat).

Table 45. Mitigation Measures Applicable to New 230 kV Circuit (Segment J)

Wildlife Species	Mitigation Measures		Vegetation Community/ Plant Species	Mitigation Measures
Arroyo Toad	AIR-2a, HYD-1, HYD-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-24		Chamise Chaparral	AIR-2a, BIO-1, BIO-2, BIO-13
Western Spadefoot Toad	AIR-2a, HYD-1, HYD-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6		Riversidian Sage Scrub	AIR-2a, BIO-1, BIO-2, BIO-4, BIO-6, BIO-13
Bald Eagle	HYD-1, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-11, BIO-17		Southern Coast Live Oak Riparian Forest	AIR-2a, BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-13
California Condor	HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-7, BIO-11,BIO-18		Southern Sycamore-Alder Riparian Woodland	AIR-2a, BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-13
Loggerhead Shrike	HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-8, BIO-11		Southern Cottonwood Willow Riparian Forest	AIR-2a, BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-13
Coastal California Gnatcatcher	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-4, BIO-5, BIO-6, BIO-8, BIO-11, BIO-15		Special-status Plant Species	AIR-2a, BIO-1, BIO-2, BIO-3, BIO-4, BIO-13
California Spotted Owl	AIR-2a, BIO-1, BIO-2, BIO-5, BIO-6, BIO-8, BIO-11, BIO-20			
Least Bell's Vireo	HYD-1, HYD-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-8, BIO-11, BIO-14			
Bat Species	HYD-1, BIO-1, BIO-2, BIO-4, BIO-5, BIO-6, BIO-21			
San Diego Black-tailed Jackrabbit	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20			
California Legless Lizard	AIR-2a, HYD-1, HYD-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-22			
Southwestern Pond Turtle	AIR-2a, HYD-1, HYD-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-22			
Coast Horned Lizard	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-22			
Coastal Rosy Boa and Two-striped Garter Snake	AIR-2a, HYD-1, HYD-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-22			
Arroyo Chub	BIO-2, BIO-3, BIO-4, BIO-5, BIO-6			
Raptors and Other Migratory Birds	HYD-1, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-8, BIO-11			

Wildlife Species	Mitigation Measures		Vegetation Community/ Plant Species	Mitigation Measures
General Wildlife	BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-8, BIO-11			

7.3 RECONDUCTORING

By utilizing the existing structures and right-of-way the project would minimize permanent impacts from the reconductoring portion of the proposed project and still allow additional transmission capacity along the corridor. Temporary impacts would occur where equipment staging, line work, or construction traffic access would be needed. The upgrade of the existing BR-RIN would involve approximately 13 miles of NFS lands and four miles of BLM-managed public lands. Reconductoring would occur along Segments A, B, G, and K. Segments A, B, and G are analyzed in detail for species impacts in the preceding sections, and Segment K is analyzed below.

Wildlife

Western Spadefoot Toad

Under Segment K, there may be direct or indirect effects to western spadefoot toad, expected to be present on this segment due to recorded sightings of tadpoles and egg masses within one mile of this segment in temporary ponds of the Santa Clara River, with additional recorded sightings of adults, tadpoles, and egg masses within two miles of the segment (CDFG 2010). Pulling and tensioning sites will likely have to be established on each end of the segment, which would result in possible habitat loss depending on specific site locations and existing disturbance. It is not expected that any road grading will be necessary, as access roads are already well maintained along this segment. If present, vegetation in the road would probably be crushed as vehicles drive the length of the segment to monitor successful reconductoring at each tower. Tadpoles and egg masses such as those that have been recorded in the Santa Clara River are not expected to be affected unless streambeds need to be crossed to access a tower, which may result in sediment deposition, hydrological changes, or even injury or mortality depending on levels of inundation at the time of reconductoring. Direct injury or mortality from crushing by equipment or vehicles may occur should individuals be present on the road or in the construction area, especially if they or their tadpoles are present in intermittent streams or temporary pools that are crossed by construction vehicles. Because anurans are known to be most active at night, any night construction may also result in crushing of any animals that travel across the road.

General practices that would reduce short-term and long-term effects to western spadefoot toad include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to western spadefoot toad include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program).

California Condor

Under Segment K, there may be direct or indirect impacts to California condor associated with implementation of the proposed action. This species is expected to be present based on GPS data supplied by USFWS (USFWS 2008b, USFWS 2009d). Pulling and tensioning sites will likely have to be established on each end of the segment, which would result in possible habitat loss depending on specific site locations and existing disturbance. It is not expected that any road grading will be necessary, as access roads are already well maintained along this segment. If present, vegetation in the road would probably be crushed as vehicles drive the length of the segment to monitor successful reconductoring at each tower. Construction presence may disturb or discourage condors that are foraging nearby and see or hear the crew members from above, but construction presence will be temporary and a small part of the overall potential foraging area, as immatures have been measured foraging over 140 miles and nesting pairs typically 31 to 44 miles in a single day (USFWS 1996b) and can likely adapt to the relatively minor change. Reconductoring work may result in trash or microtrash being left behind by the crews, even with the implementation of mitigation measure BIO-18, Protect California Condor. Any leftover trash or microtrash has the possibility to be ingested by condors, which in turn would be regurgitated for chicks to feed on, which can lead to mortality of the chicks (USFS 2008). This is a short-term impact that would be addressed by the implementation of BIO-18 and the creation of a Proper Disposal of Construction Waste Plan for the Project. As stated in mitigation measure BIO-6, road kill within the construction area would be reported within 24 hours to the USFS or BLM if on NFS or BLM land, respectively, or to the local animal control center if on non-federal lands. If condors are present in the construction area, then all construction will stop until the condor leaves the area; the biological monitor will document the occurrence and report it to USFWS (and USFS if applicable).

General practices that would reduce short-term or long-term effects to California condor include GP-38, GP-40, GP-50, GP-59, GP-60, GP-61, GP-67, and GP-69. Mitigation measures that would reduce short-term or long-term effects to California condor include BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-18 (Protect California condor). Formal consultation is being conducted with the USFWS to determine if any additional protection measures other than those mentioned above are necessary to protect California condors. In addition, any reasonable and prudent measures requested by the USFWS to protect the California condor will be implemented.

Coastal California Gnatcatcher

Under Segment K, there may be direct or indirect construction impacts to coastal California gnatcatcher, expected to be present on the southern end of the segment due to numerous sightings just south of the ANF boundaries by a POWER biologist in winter 2009/2010. This segment also crosses through coastal California gnatcatcher designated critical habitat in this area for approximately 2.9 miles of its length; this area of critical habitat constitutes approximately 176.7 acres within the 500 foot corridor. Segment K is an existing line with ongoing maintenance activities. Should spur roads need to be re-established, they would need to be graded and cleared as necessary for construction access. This could potentially result in loss or alteration of designated critical habitat. No disturbance is expected outside of the existing ROW, so any habitat that may need to be cleared for construction would be inside the ROW. However, the habitat is somewhat disturbed in this area due to general transmission maintenance activities, such as tower access or brush-related fire prevention. Some towers may need to be modified or replaced either above- or below-ground to accommodate a new, heavier conductor. This would potentially require ground disturbance at these locations, which could result in possible habitat removal or disturbance to individual birds that may temporarily leave the area because of construction activities. Further habitat degradation may occur through the deposition of dust or other contaminants onto leaves, which can reduce their vigor and reduce habitat quality in the area. Dust control measures would be implemented to help reduce this impact. Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area, which may leave them open to predation. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals. Because nesting may occur outside of the officially recognized nesting season, if construction approaches any undetected nests with eggs or young, the disturbance may cause the adult(s) to abandon the nest.

General practices that would reduce short-term or long-term effects to California condor include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to California condor include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-18 (Protect California condor). Formal consultation is being conducted with the USFWS to determine if any additional protection measures other than those mentioned above are necessary to protect California condors. In addition, any reasonable and prudent measures requested by the USFWS to protect the California condor will be implemented.

Pallid Bat, Townsend's Big-eared Bat, Western Mastiff Bat, and Western Red Bat

Under Segment K, there may be direct or indirect construction impacts to pallid bat, Townsend's big-eared bat, western mastiff bat, and western red bat. Pallid bat and Townsend's big-eared bat are expected to have a possibility of occurring on this segment due to availability of suitable roosting and foraging habitat between the northern, suburban and southern, forested sections of this project area. Western mastiff bat and western red bat are expected to be likely to occur based on availability of suitable habitat. Disturbance on this segment will be minimal and will mainly be concentrated in specific locations of pull and tension sites. Vehicles will drive through to check successful reconductoring at each tower, but access roads are already in place and well-maintained and additional work is unlikely. Pallid bats and Townsend's big-eared bats in particular are sensitive to human disturbance, and construction during summer months, when bat activity is higher, may cause a greater degree of disturbance to the bats, potentially leading to their abandonment of the area (Vaughan and O'Shea 1976, Piaggio 2005). This can indirectly lead to injury or mortality if it results in encounters with equipment or in decreased fitness at a new location due to unfamiliarity. The bats would likely return to the same roost the following season if it were still available (B. Doering personal communication 2011). Mating for pallid bats occurs from October to February, birth from April to July, and final weaning in August; mating in Townsend's big-eared bats generally occurs between October and February, with birth between May and July; mating in western mastiff bats typically begins in early March with birth ending in September; and mating in western red bats occurs in late summer or early fall with birth the following summer (Reid 2006). Construction such as establishment of pull and tension sites during certain time periods of these windows may be more disturbing to some bat species than others, if present. Because bats are mainly nocturnal, any night activities may disturb them, disrupting foraging and potentially leading to injuries.

Should a bat roost be disturbed by construction, complete abandonment of the roost may result, particularly for more sensitive species like pallid bats or Townsend's big-eared bats. This may lead to complete nesting failure for the season, resulting in a loss of that year's new bat births. Because bats are mainly nocturnal, any night construction would disturb them, disrupting foraging and potentially leading to injuries. Disruption of hibernation is unlikely given the generally warm winters in Southern California. McNab (1974) suggests that only bats that are both small and do not cluster in groups can hibernate when the environmental temperature is above 14°C (57.2°F). Pallid bats may roost alone or in groups from two to several hundred and, although they will hibernate in cold parts of their range, they overwinter in coastal California (Rambaldini 2005). They have been reported to remain active at temperatures between -5°C (23°F) and 10°C (50°F). Townsend's big-eared bats may hibernate in groups of single individuals to several hundred; in some areas, mainly in the eastern U.S., they may hibernate in groups up to several thousand (Piaggio 2005). Western mastiff bats cluster in groups of 30 to several hundred and do not undergo long periods of hibernation, instead remaining periodically active throughout the winter (Siders 2005). Although winter behavior of western red bats is not well understood, it is possible that they also do not hibernate for long periods, as this species has been reported to be found foraging during the winter on warm days, even in northern California (Bolster 2005). It is likely that bats in the Project area would periodically enter states of torpor but would generally remain relatively active compared to bats in colder parts of the country, where hibernation is more feasible.

General practices that would reduce short-term or long-term effects to special-status bat species include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short-term or long-term effects to special-status bat species include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-21 (Protect sensitive bat species).

Unarmored Threespine Stickleback

Under Segment K, there may be direct or indirect construction impacts to unarmored threespine stickleback, expected to be likely to occur along Segment K due to numerous sightings of fish within the Santa Clara River (CDFG 2010). While this species has not been recorded elsewhere along the segment length, any vehicular crossings through streambeds by vehicles checking reconductoring success at each tower would possibly affect stickleback habitat. If the areas are wet at the time of reconductoring, this could result in sediment deposition and hydrological changes from vehicle tires; if streambeds are dry then it will likely result in slight changes to the streambed substrate, but notably less than when wet. To analyze this sediment deposition, a watershed analysis was conducted for BRRTP (see the BRRTP Water Resources Technical Report in Volume IV of the EIS/EIR, USFS/BLM/LADWP 2011, for details on how this analysis was conducted). The reconductoring would affect the Sand Canyon-Santa Clara River subwatershed, which has a combined area of 38,533 acres. Estimated average baseline annual erosion for this subwatershed is 47.69 tons/acre/year. With construction of the reconductoring along Segment K, predicted average annual erosion would be 47.75 tons/acre/year, an increase of 0.11 percent increase over baseline. The ground disturbance activities could potentially alter drainage patterns within the work areas and result in soil erosion leading to increased sedimentation. However, with the implementation of mitigation measures HYD-01 and HYD-02 (Table 4.3.3-1), the potential impacts (less than 1% over baseline) resulting from substantial drainage pattern alteration would be considered less than significant for CEQA.

General practices that would reduce short-term or long-term effects to unarmored threespine stickleback or its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to unarmored threespine stickleback include HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activites and vehicle operation would be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program).

The biological resources listed below and impacted by the reconductoring are discussed above in detail for Segment A, B, and G. The vegetation types observed within the entire proposed reconductoring portion of the project include:

- Agricultural Land
- California Annual Grassland
- Chamise Chaparral
- Disturbed/Developed
- Joshua Tree Woodland
- Mojave Creosote Bush Scrub
- Mojave Wash Scrub
- Riversidian Sage Scrub

- Sandy Area Other than Beaches (e.g., Santa Clara River)
- Scrub Oak Chaparral
- Southern Coast Live Oak Riparian Forest
- Southern Mixed Chaparral
- Southern Riparian Scrub
- Southern Sycamore Alder Riparian Woodland
- Southern Willow Scrub

There are no known special-status plant species within Segment K.

The 19 special-status plant species that are likely to occur within Segment K include:

- Nevin's barberry (*Berberis nevinii*)
- Slender mariposa lily (*Calochortus clavatus* var. *gracilis*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Alkali mariposa lily (*Calochortus striatus*)
- Peirson's morning-glory (*Calystegia peirsonii*)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi)*
- Slender-horned spineflower (*Dodecahema leptoceras)*
- Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- San Gabriel bedstraw (*Galium grande*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Ross's pitcher sage (*Lepechinia rossii*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Short-joint beavertail (*Opuntia basilaris* var. *brachyclada*)
- White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)
- Chaparral ragwort (*Senecio aphanactis*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- Greata's aster (*Symphyotrichum greatae*)

The 17 special-status plants that could possibly occur within the reconductoring portion include:

- California androsace (*Androsace elongata* ssp. *acuta*)
- Braunton's milk-vetch (*Astragalus brauntonii*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*)
- Santa Susana tarplant (*Deinandra minthornii*)
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)
- California satintail (*Imperata brevifolia*)
- Southern California black walnut (*Juglans californica*)
- Pale-yellow layia (*Layia hetertricha*)
- Ocellated lily (*Lilium humboldtii* ssp. *ocellatum*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)
- Ojai navarretia (*Navarretia ojaiensis*)
- Gairdner's yampah (*Perideridia gairdneri ssp. gairdneri*)
- Coulter's matilija poppy (*Romneya coulteri*)
- San Bernardino aster (*Symphyotrichum defoliatum*)
- Lemmon's syntrichopappus (*Syntrichopappus lemmonii*)

The 16 special-status plants that are unlikely to occur within the reconductoring portion include:

- Kusche's sandwort (*Arenaria macradenia* var. *kusche*)
- San Gabriel manzanita (*Arctostaphylos gabrielensis*)
- Palmer's mariposa lily (*Calochortus palmeri var. palmeri)*
- Mojave tarplant (*Deinandra mohavensis*)
- San Gabriel River dudleya (*Dudleya cymosa* ssp. *crebrifolia*)
- Tehachapi buckwheat (*Eriogonum callistum*)
- Kern buckwheat (*Eriogonum kennedyi* var. *pinicola*)
- Delicate bluecup (*Githopsis tenella*)
- Fragrant pitcher sage (*Lepechinia fragrans*)
- Rock monardella (*Monardella viridis* var. *saxicola*)
- Baja navarretia (*Navarretia peninsularis*)
- Rock Creek broomrape (*Orobanche valida* ssp. *valida*)
- Southern Mountains skullcap (*Scutellaria bolanderi ssp. austromontana*)
- Parish's checkerbloom (*Sidalcea hickmanii ssp. parishii*)
- Laguna Mountains jewelflower (*Streptanthus bernardinus*)
- Southern jewelflower (*Streptanthus campestris*)

Direct impacts to special-status plant species may occur in a variety of ways, including the direct removal of plants during the course of construction. Clearing and grading associated with the placement of towers or the grading of access or spur roads may also result in the alteration of soil conditions, including the loss of native seed banks and changes to the topography and drainage of a site such that the capability of the habitat to support special-status species is impaired. Indirect impacts include the creation of conditions that are favorable for the invasion of weedy exotic species that prevent the establishment of desirable vegetation and may adversely affect wildlife. Construction on steep hillsides may also result in off-site sediment transport that may bury rare plants in adjacent habitat or alter soil conditions. Dust from road travel, grading, or other construction activities may also reduce photosynthetic capacity in plants over time or inhibit reproduction by physically coating reproductive structures or excluding insect pollinators. Soil disturbance may also result in the spread of invasive plant species. Trampling due to foot or vehicular traffic could result in soil compaction if it occurs repeatedly within any specific area; soil compaction may in turn lead to reduced water absorption and increased runoff, potentially contributing to an increase in non-native plant species, which could be more tolerant of these conditions.

The potential introduction or spread of noxious and invasive weeds would occur primarily during construction activities, but would also continue to occur during operation and maintenance phases of the Project. The introduction of noxious and invasive weeds would be related to ground disturbance from clearing and grading, expansion of access roads, construction of spur roads, and road maintenance; the use of vehicles, construction equipment, or earth materials contaminated with non-native plant seed; use of straw bales or wattles that contain seeds of non-native plant species; and enhanced public access to the Project corridor during and after construction. Additionally, weed seeds are often spread on equipment or clothing by construction or maintenance personnel. This would provide many avenues for new propagules (any part of a plant that may generate a new individual plant) to be carried into areas that previously were isolated from sources of noxious weed seeds. Direct impacts associated with the introduction of noxious weeds could occur when noxious weeds become established in an area. These invasive plant species can cause a permanent or long-lasting change to the environment by increasing vegetative cover, creating a dense layer that prevents native vegetation from germinating, altering the edaphic and hydrological conditions through nitrogen fixation (as in Spanish broom), or may drain the water table (as in giant reed). Noxious weeds can create such an unfavorable environment for wildlife that associate, mutualistic species necessary for native plant life cycles, such as seed dispersers, fossorial mammals, or pollinators, are lost from the area. Indirect impacts attributed to the colonization of noxious weeds could include a gradual decrease in natural biodiversity, as noxious weed infestations may extirpate native plant populations.

Operational impacts would also include trampling or crushing due to public use of new or improved spur roads and access roads, increased erosion, and the spread and colonization of noxious weeds. Other operational impacts include removal and trimming of vegetation during maintenance activities. Restoration activities may inadvertently lead to negative effects on special-status plant species, should they be present during construction. For instance, seed collection from native plants may result in the unintentional trampling of smaller listed species should they be present in the area, or in the removal of seeds from listed species. Effective preconstruction flagging of these species would assist in reducing the likelihood of incidental effects during seed collection or even weed removal. Weed removal may also lead to species that are not non-native being unintentionally treated or removed.

General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-38, GP-39, GP-40, GP-48, GP-51, GP-52, GP-53, GP-59, GP-60, GP-61, GP-62, GP-67, and GP-69. Mitigation measures that would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat).

Special-status wildlife known to occur within the proposed reconductoring portion of the proposed project include:

- Desert tortoise
- Desert kit fox
- American badger
- Coastal California gnatcatcher
- California condor

Coastal California gnatcatcher and California condor are already analyzed for effects of the reconductoring above. The remaining species are analyzed below.

Desert Tortoise

Reconductoring of the existing transmission line may result in direct or indirect effects to the desert tortoise, expected to be present in the upper portions of the existing lines due to availability of suitable habitat and documentation of a live tortoise by POWER (POWER 2009c). Implementation of this portion of the Project may result in injury or mortality as a result of crushing by vehicles or equipment. New towers are not expected to be constructed, and roads will not be graded unless for existing access is damaged at the time of construction. Habitat loss will be minimal and will only occur in cases where new grading is required; habitat degradation may occur as a result of the spread of non-native plant seeds. Tortoises in or near the existing ROW may become stressed as a result of the human activity, potentially exposing themselves to predation or excessive heat if they are in the open and not moving. However, because this is only a reconductoring operation, the presence of humans will be of a relatively short duration. Burrows are not likely to be present in the road due to the lack of covering vegetation, but if vegetation is present underneath the existing towers, then there is the potential for burrows to be present, which could be crushed. A qualified biologist would survey for burrows within the Project area before construction and, if burrows are found in the construction area, the biologist would excavate the burrows and continue to monitor the area during construction to ensure that no tortoise(s) return.

General practices that would reduce short-term or long-term effects to desert tortoise include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to desert tortoise include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6

(Implement a Worker Environmental Awareness Program), and BIO-23 (Protect desert tortoise and habitat loss).

Desert Kit Fox

Reconductoring of the existing transmission line may result in direct or indirect effects to the desert kit fox, expected to be likely to occur in the upper portions of the existing lines due to availability of suitable habitat and presence of numerous signs of this species discovered by POWER during 2008 desert habitat surveys (POWER 2009c). Implementation of this portion of the Project may result in injury or mortality as a result of crushing by vehicles or equipment. New towers are not expected to be constructed, and roads will not be graded unless the existing access is damaged at the time of construction. Habitat loss will be minimal and will only occur in cases where new grading is required; habitat degradation may occur as a result of the spread of non-native plant seeds. Kit foxes in or near the existing ROW may become stressed as a result of the human activity and temporarily vacate the area or retreat into burrows if active diurnally during construction. However, because this is only a reconductoring operation, the presence of humans will be of a relatively short duration. Habitat degradation may also occur as a secondary effect of adjacent habitat loss or general construction access. This could result from the spread of non-native vegetation in the construction or access area or from excessive dust from construction in the desert area, necessitating the implementation of non-native weed prevention and dust control measures. Preconstruction surveys for burrows within the construction areas would be conducted by a qualified biologist; if any occupied burrows are found, construction would be avoided in this area during the breeding season if feasible.

General practices that would reduce short-term or long-term effects to desert kit fox include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to desert kit fox include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

American Badger

Reconductoring of the existing transmission line may result in direct or indirect effects to the American badger, expected to be present in the upper portions of the existing lines due to availability of suitable habitat, presence of active burrows near the Project area, and presence of numerous signs of this species discovered by POWER during 2008 desert habitat surveys (POWER 2009c). Implementation of this portion of the Project may result in injury or mortality as a result of crushing by vehicles or equipment. New towers are not expected to be constructed, and roads will not be graded unless the existing access is damaged at the time of construction. Habitat loss will be minimal and will only occur in cases where new grading is required; habitat degradation may occur as a result of the spread of non-native plant seeds. Badgers in or near the existing ROW may become stressed as a result of the human activity and temporarily vacate the area or retreat into burrows if active diurnally during construction. However, because this is only a reconductoring operation, the presence of humans will be of a relatively short duration. Preconstruction surveys for burrows within the construction areas would be conducted by a qualified biologist; if any occupied burrows are found, construction would be avoided in this area during the breeding season if feasible.

General practices that would reduce short-term or long-term effects to American badger include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to American badger include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5

(Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Common species that may occur include species such as side-blotched lizard, Pacific tree frog, California tree frog, western toad, coyote, desert woodrat, bobcat, and various unknown migratory bird species. Reconductoring may result in injury, mortality, or displacement of any of these species due to crushing or collision during establishment of pull and tension sites or during vehicular travel; loss of habitat or reduction in food availability during construction; and disturbance from construction noise and vibration leading to dispersal.

Coastal California Gnatcatcher

USFWS designated critical habitat for the California Gnatcatcher is located on Segment K of the reconductoring portion of the proposed project. Direct and indirect impacts could occur from accessing this transmission line and construction activities. Because access roads and tower pads are already present on the existing transmission line, it is unlikely that any habitat loss would occur as a result of the reconductoring operation. If vegetation has established within the tower pads or if the access roads are unsafe for vehicle passage at the time of construction, vegetation removal may be required to ensure safe placement of vehicles at sites or passage along roads. Areas of removed vegetation have the potential to be taken over by non-native plant species, which would also result in localized habitat degradation. Removed vegetation would be mitigated in consultation with the USFWS. A qualified biologist would monitor construction in or near areas of occupied habitat, which would also include monitoring of noise levels. Construction would be timed during the nonbreeding season if possible; if not, detected active territories or nests during the breeding season would be protected with a 300-foot buffer that could only be breached with the approval of the USFWS. While noise levels would be restricted to 60 dB(A) or less near areas of occupied habitat, previous studies of construction monitoring and noise thresholds suggest that California gnatcatchers are tolerant of adjacent construction and high noise levels (Mock 2004). During construction monitoring in an area occupied by a California gnatcatcher during the nonbreeding season, the individual California gnatcatcher was documented in the area on an almost daily basis throughout the construction period, and was documented in the area several times following the completion of construction (R. Winkleman, personal observation 2009). The reconductored line is expected to result in a corona noise level of 40 dB(A) directly under the centerline (K. Bell, personal communication 2011), well under the 60 dB(A) maximum that would be imposed during construction. Because most construction impacts in this segment are anticipated to only consist of vehicle passage and reconductoring at specific towers, impacts related to human presence would primarily be short-term. Impacts to this species would be considered significant due to their protection under ESA and would require formal consultation with USFWS. LADWP would implement GPs and Mitigation Measures and comply with any additional USFWS requirements.

Table 46. Mitigation Measures Applicable to Reconductoring (A, B, G, and K)

Wildlife Species	Mitigation Measures	Vegetation Community/Plant Species	Mitigation Measures
Burrowing Owl	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-8, BIO-16	Chamise Chaparral	AIR-2a, BIO-1, BIO-2, BIO-13
American Badger	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20	Riversidian Sage Scrub	AIR-2a, BIO-1, BIO-2, BIO-4, BIO-6 BIO-13
Kit Fox	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20	Joshua Tree Woodland	AIR-2a, BIO-1, BIO-2, BIO-13
Spotted Owl	AIR-2a, BIO-1, BIO-2, BIO-5, BIO-6, BIO-8, BIO-11, BIO-20	Mojave Creosote Bush Scrub	AIR-2a, BIO-1, BIO-2, BIO-13

Wildlife Species	Mitigation Measures	Vegetation Community/Plant Species	Mitigation Measures
California Condor	HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-7, BIO-11,BIO-18	Mojave Wash Scrub	AIR-2a, BIO-1, BIO-2, BIO-4, BIO-6, BIO-13
California Red-legged Frog	AIR-2a, HYD-1, HYD-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-24	Sandy Area Other than Beaches	AIR-2a, BIO-1, BIO-2, BIO-13
Southwestern Willow Flycatcher, Least Bell's Vireo, Western Yellow-billed Cuckoo	AIR-2a, HYD-1, HYD-2, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-8, BIO-11, BIO-14	Scrub Oak Chaparral	AIR-2a, BIO-1, BIO-2, BIO-13
Coastal California Gnatcatcher	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-4, BIO-5, BIO-6, BIO-8, BIO-11, BIO-15	Southern Coast Live Oak Riparian Forest	AIR-2a, BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-13
Coast (San Diego) Horned Lizard	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-22	Southern Mixed Chaparral	AIR-2a, BIO-1, BIO-2, BIO-13
Pallid Bat, Townsend's Big-eared Bat, Western Mastiff Bat, Western Red Bat	HYD-1, BIO-1, BIO-2, BIO-4, BIO-5, BIO-6, BIO-21	Southern Riparian Scrub	AIR-2a, BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-13
Desert Tortoise	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-23	Southern Sycamore Alder Riparian Woodland	AIR-2a, BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-13
Mohave Ground Squirrel	AIR-2a, HYD-1, BIO-1, BIO-2, BIO-5, BIO-6, BIO-20	Southern Willow Scrub	AIR-2a, BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-13
Unarmored Threespine Stickleback, Santa Ana Sucker, and Arroyo Chub	HYD-1, HYD-2, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6	Special-status Plant Species	AIR-2a, BIO-1, BIO-2, BIO-3, BIO-4, BIO-6, BIO-13
Raptors and Other Migratory Birds	HYD-1, BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-8, BIO-11		
General Wildlife	BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-8, BIO-11		

7.4 NEW HASKELL CANYON SWITCHING STATION

All of the vegetation communities and cover types occurring within the proposed 2.7-acre development "footprint" at the Haskell Canyon Switching Station site would be impacted by the construction of the proposed switching station. The station yard would include a paved internal access road approximately 16 feet wide, 100 foot by 100 foot gravel parking area, and would be enclosed by chain-link fencing with barbed-wire extension for security. An additional 16.7 acres would be developed at the switching site to accommodate the additional road and fencing. A total of 19.4 acres would be considered permanent impact.

Impacts from construction would include the permanent loss of 19.4 acres of Riversidian Sage Scrub. Impacts to this vegetation community have the potential to be significant. While no protocol botanical surveys were conducted within this area, the on-site habitat is heavily degraded due to the existing access roads and transmission towers, and it is unlikely to support special-status plant species. The same species that could potentially occur on Segment G could potentially occur within this footprint. However, the potential to occur is expected to be unlikely for all species due to the pre-existing level of habitat degradation. Direct effects include vegetation loss and partial or complete destruction of special-status plant species. Preconstruction surveys should locate any special-status plants on-site so that they can be avoided or relocated if necessary, but in the event that a plant goes unseen or if construction occurs during a time when plants are not flowering and are not distinguishable, destruction of the plant by grading or excavation is a possibility. Trampling by ground crews would likely not kill any plants, but may partially destroy their above-ground biomass. Indirect effects include spread of non-native plant species, soil compaction, and increased dust deposition. There is potential for construction activities to introduce noxious or invasive plant species to the existing desert habitats. Vehicles moved from one construction site to the next sometimes introduce non-native or invasive plants by transporting seeds that may be clinging to vehicle structures or that have been incorporated into soil adhering to the vehicle. In addition, the potential for establishment of invasive plants can be increased when construction vehicles alter the structure of existing soils through compaction or excavation, which alter the ability of native plants to compete with introduced plant species. The risk of introducing invasive plants can be reduced by thoroughly cleaning construction vehicles (or maintenance) before moving to a new site and minimizing the area affected by vehicular traffic.

Soil compaction from construction or excessive vehicular passage can result in plants being unable to receive sufficient water and nutrients through the soil to their roots. This could result in a loss of vigor and vitality to any plant that is present within soil that has been compacted. Additionally, soil compaction can result in increased runoff due to decreased water absorption in the soil. During construction, dust deposition from passing vehicles or from construction in dry dirt has the potential to result in decreased plant vigor due to reduced photosynthetic capabilities from a dust layer. Operational impacts would also include trampling or crushing due to public use of new or improved spur roads and access roads, increased erosion, and the spread and colonization of noxious weeds. Other operational impacts include removal and trimming of vegetation during maintenance activities.

GPs would be implemented as part of the proposed Project to avoid or minimize impacts to biological resources including rare plant species. These GPs include avoiding or compensating for impacts to unique vegetation communities, training personnel, restricting work to within predetermined limits of construction, implementing erosion BMPs, construction monitoring, flagging vegetation for avoidance, and revegetation with appropriate seed mixes. In addition to the GPs, the following mitigation measures are presented to further reduce impacts of the proposed Project on listed plants: AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat).

To reduce Project impacts from the spread or establishment of noxious weeds, LADWP shall implement Mitigation Measures BIO-1 and BIO-2. These mitigation measures would minimize the potential spread of noxious weeds as required by Forest Service Manual 2080.

There may be direct or indirect effects to coast horned lizard, expected to be present due to its presence throughout the Project area and especially on Segment G, which is north of the Haskell Canyon Switching Station. Grading of new access roads would result in habitat and vegetation loss, and may result in direct injury or mortality of individuals. Additionally, any coast horned lizards that go undetected by preconstruction surveys—in compliance with mitigation measure BIO-22—and are present under vegetation, on roads, or in burrows, may be crushed by foot traffic, vehicles, or heavy equipment. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any coast horned lizards, which may fall into them. It is expected that the risk of falling into an open hole would be greater overnight, as the construction noise and vibrations would be more likely to keep any coast horned lizards from approaching too close to the active site during the day. The construction work may also lead to dispersal of individuals from the area, potentially leading to an increased risk or predation or competition if any animals are forced to relocate to unfamiliar territory.

General practices that would reduce short-term or long-term effects to coast horned lizard include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to coast horned lizard include include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status reptile species).

There may be direct or indirect construction impacts to pallid bat or Townsend's big-eared bat, expected to have possibilities of occurring due to the availability of suitable habitat around the switching station. Pallid bats and Townsend's big-eared bats in particular are sensitive to human disturbance, and construction during summer months, when bat activity is higher, may cause a greater degree of disturbance to the bats, potentially leading to their abandonment of the area (Vaughan and O'Shea 1976, Piaggio 2005). This can indirectly lead to injury or mortality if it results in encounters with equipment or in decreased fitness at a new location due to unfamiliarity. The bats would likely return to the same roost the following season, if it were still available (B. Doering personal communication 2011). Mating for pallid bats occurs from October to February, birth from April to July, and final weaning in August, while mating in Townsend's big-eared bats generally occurs between October and February, with birth between May and July (Reid 2006). Construction during certain time periods of these windows may be more disturbing than others, if bats are present. Should a bat roost be disturbed by construction, it may result in complete abandonment of the roost, particularly for more sensitive species like pallid bats or Townsend's big-eared bats. This may lead to complete nesting failure for the season, resulting in a loss of that year's new bat births. Because bats are mainly nocturnal, any night construction would disturb them, disrupting foraging and potentially leading to injuries. Disruption of hibernation is unlikely, given the generally warm winters in Southern California. McNab (1974) suggests that only bats that are both small and do not cluster in groups can hibernate when the environmental temperature is above 14°C (57.2°F). Pallid bats may roost alone or in groups from two to several hundred and, although they will hibernate in cold parts of their range, they overwinter in coastal California (Rambaldini 2005). They have been reported to remain active at temperatures between -5°C (23°F) and 10°C (50°F). Townsend's big-eared bats may hibernate in groups of single individuals to several hundred; in some areas, mainly in the eastern U.S., they may hibernate in groups up to several thousand (Piaggio 2005). It is likely that bats in the Project area would periodically enter states of torpor but would generally remain relatively active compared to bats in colder parts of the country, where hibernation is more feasible.

General practices that would reduce short-term or long-term effects to special-status bat species include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short-term or long-term effects to special-status bat species include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-21 (Protect sensitive bat species).

There may be direct or indirect construction impacts to burrowing owls; however, they are unlikely to occur based on previous surveys conducted in the area in 2009. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-16, would identify any possible active or inactive burrowing owl burrows, but some burrows may still go unnoticed or be incorrectly identified as rodent-only burrows and may therefore be crushed or damaged by vehicles, heavy equipment, or trampling. This may result in the injury or mortality of one or more owls if they are present.

General practices that would reduce short-term or long-term effects to burrowing owl include GP-8, GP-23, GP-24, GP-25, GP-34, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to burrowing owl include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-16 (Protect burrowing owl).

Several migratory and non-migratory species may also frequent this vegetation type. Because LADWP would implement GPs and Mitigation Measures and comply with any additional USFWS and CDFG requirements, the potential impacts from development and operation of the Haskell Canyon Switching Station would be expected to reduce to less than significant.

7.5 EXPANSION OF BARREN RIDGE SWITCHING STATION

LADWP proposes expansion of the existing Barren Ridge Switching Station to the east side by 235 feet by 500 feet for a total station size of 485 feet by 500 feet (approximately 5.6 acres). The expansion area of the station would include electrical structures and equipment for the addition of transmission lines, a material staging area, roadway within the station, and drainage area.

Mojave Creosote Bush Scrub would be impacted by the construction of the proposed expansion of the switching station. Expansion of the switching station may affect special-status biological resources. While no protocol botanical surveys were conducted within this area, the area immediately around the switching station is degraded due to human activity. Because of its proximity to the surveyed area, the area surrounding the Barren Ridge switching station can be reasonably assumed to have the same or less potential to support special-status plant species. Any plants that are in the area to be expanded would be permanently removed. Special-status plants that have the potential to occur in this area include alkali mariposa lily, white pygmy-poppy, Red Rock tarplant, Mojave tarplant, Barstow woolly sunflower, Red Rock poppy, pale-yellow layia, creamy blazing star, Charlotte's phacelia, and Piute Mountains jewel-flower. Direct impacts to special-status plant species may occur in a variety of ways, including the direct removal of plants during the course of construction. Clearing and grading associated with site expansion or the grading of access or spur roads may also result in the alteration of soil conditions, including the loss of native seed banks and changes to the topography and drainage of a site such that the capability of the habitat to support special-status species is impaired. Indirect impacts include the creation of conditions that are favorable for the invasion of weedy exotic species that prevent the establishment of desirable vegetation and may adversely affect wildlife. Dust from road travel, grading, or other construction activities may also reduce photosynthetic capacity in plants over time or inhibit reproduction by physically coating reproductive structures or excluding insect pollinators. Soil disturbance may also result in the spread of invasive plant species. Operational impacts would also include trampling or crushing due to public use of new or improved spur roads and access roads, increased erosion, and the spread and colonization of noxious weeds. Other operational impacts include removal and trimming of vegetation during maintenance activities.

GPs would be implemented as part of the proposed Project to avoid or minimize impacts to biological resources including rare plant species. These GPs include avoiding or compensating for impacts to unique vegetation communities, training personnel, restricting work to within predetermined limits of construction, implementing erosion BMPs, construction monitoring, flagging vegetation for avoidance, and revegetation with appropriate seed mixes. In addition to the GPs, the following mitigation measures are presented to further reduce impacts of the proposed Project on listed plants: AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat).

Expansion of this area also has the potential to affect special-status wildlife species that are known to be in the area. The Project's potential impacts to desert tortoise include habitat loss, disturbance and mortality during construction through crushing. Any tortoises that are present within the construction area would be relocated and would be permanently excluded from this area. Because the average desert tortoise home range can be anywhere from 10 to 100 acres (Meyer 2008), the 2.7-acre expansion of the existing Barren Ridge Switching Station would remove approximately 2.7 to 27% of the average home range. Because this operation would be an expansion of the existing facility and not a separate facility in a different patch of habitat, it would increase the size of the continuous disturbance without forcing any local desert tortoises to travel through fragments of habitat between facilities. Expansion of the switching station may indirectly lead to tortoise mortality if any tortoises are present within the footprint by increasing their likelihood of predation by ravens. This could occur if a tortoise is moved outside of the construction area and does not have a burrow yet, or by the increased human presence increasing the number of ravens on-site. Presence of a qualified biological monitor and implementation of tortoise mitigation as described in BIO-23 would reduce the risk of some of these impacts, although habitat loss is unavoidable. Construction would result in degradation of desert tortoise habitat due to soil and vegetation disturbance, introduction of non-native plant species, habitat fragmentation, and increased noise, traffic, equipment movement, and human presence. Disease resulting from human-caused stress is also taking a heavy toll on the desert tortoise (Berry 2008). During the 2008 habitat assessment this species was present. Impacts to habitat occupied by the federally-listed endangered desert tortoise would constitute a take under ESA. Impacts to this species would be considered significant due to their protection under ESA and would require formal consultation with USFWS.

General practices that would reduce short-term or long-term effects to desert tortoise include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to desert tortoise include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-23 (Protect desert tortoise and habitat loss).In addition, the proposed 5.6 acres expansion to the "footprint" at the Barren Ridge Switching Station would be permanent. LADWP would implement GPs and Mitigation Measures and comply with any additional USFWS and CDFG requirements.

8.0 ALTERNATIVES

NEPA and CEQA both require consideration of a reasonable range of alternatives to the Proposed Action that would feasibly attain most of the basic objectives of the Project, but avoid or substantially lessen any of the significant or adverse effects of the Project.

8.1 DEVELOPMENT OF ALTERNATIVES

A range of alternatives were identified through a siting analysis, the scoping process, and supplemental studies and consultations. A full discussion of alternatives development can be found in the Alternatives Development Report (Appendix B in USFS/BLM/LADWP 2011).

The regional siting analysis identified nine routing opportunities (Segments A through I) for the new 230 kV transmission line between Barren Ridge Switching Station and the proposed Haskell Canyon Switching Station. Some of the routing opportunities or segments were adjusted or modified based on public input and preliminary environmental review, and preliminary electrical system studies. Each of the segments are discussed in detail, including impact analysis, in Section 7.0 of this report. Several of these segments were not used in the formation of alternatives as discussed below.

Segment E was recommended for elimination from analysis in the EIS/EIR. The Segment would require an additional 6.5 miles of transmission line in comparison to the Proposed Action and would not significantly reduce or avoid impacts to air quality, biological, cultural, visual, and water resources. Segment H was also recommended for elimination, due to increased impacts to air quality and noise, along with safety concerns, related to helicopter construction. Cumulative effects for the Project would also increase because of the further disturbance of revegetated and rehabilitated areas and potential for impacts from three transmission line projects in the same vicinity.

Eight routing opportunities (Segments A, B, C, D, F, G, 2a, and I) were combined to create end-to-end routing alternatives for the proposed double-circuit 230 kV transmission line between Barren Ridge Switching Station and the proposed Haskell Canyon Switching Station. In addition to routing segments, each Alternative discussed within this section would include other Project components as discussed earlier within this report. These include the addition of a new circuit on existing towers between Castaic Power Plant and Haskell Canyon, reconductoring of the existing BR-RIN transmission line, construction of a new Haskell Canyon Switching Station, and expansion of the existing Barren Ridge Switching Station. Impact assessment and impact results for each of the other Project components listed above, and which are common to each of the Alternatives, are described in Section 7.0. Descriptions and impact assessment of the routing alternatives follow in the sections below.

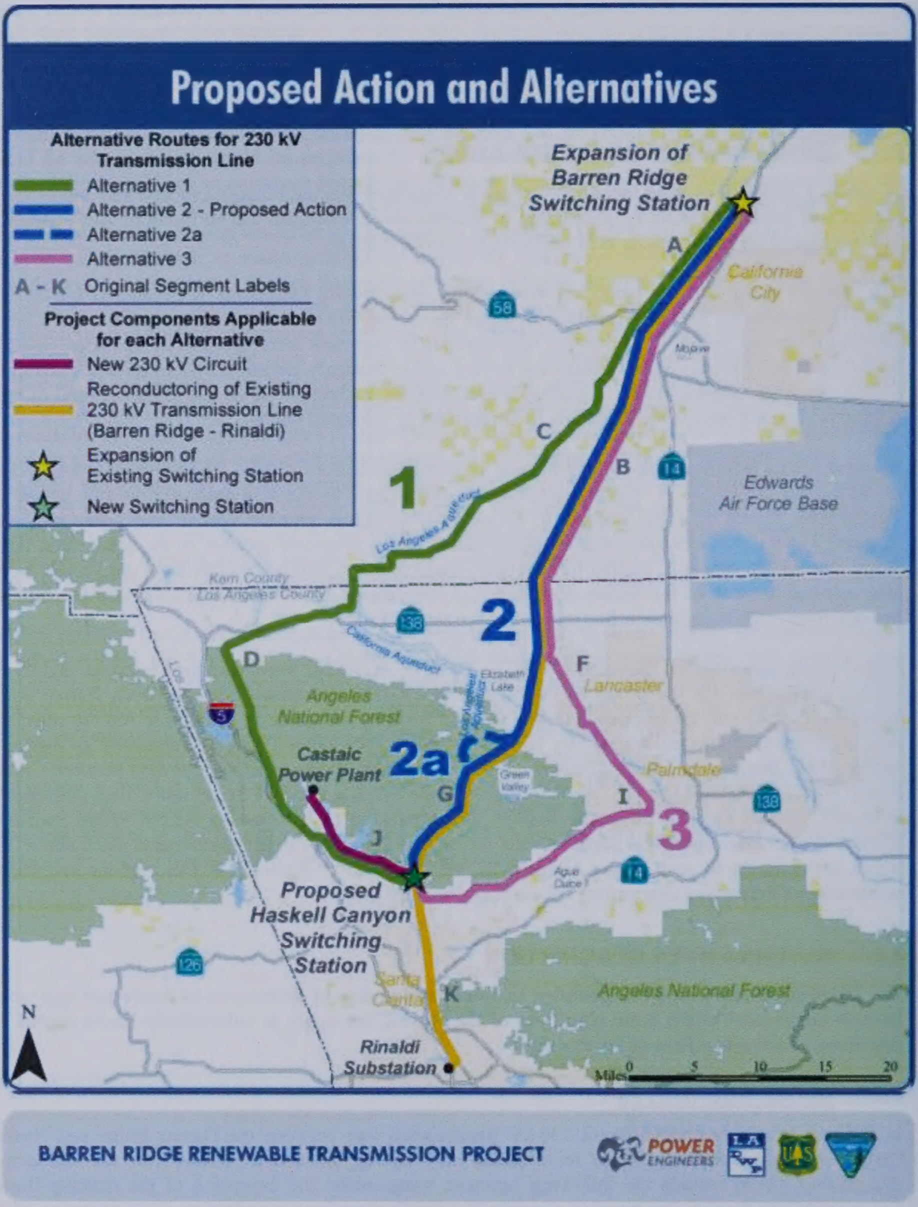
8.2 ALTERNATIVES DESCRIPTION

The following alternatives were identified as a reasonable range of alternatives to the Project that would feasibly attain most of the basic objectives of the Project, but avoid or substantially lessen any of the significant or adverse effects of the Project.

8.2.1 Action Alternatives

In addition to a new double-circuit 230 kV transmission line between the Barren Ridge and Haskell Canyon switching stations, whose route would vary among the action Alternatives, the four action Alternatives would include the following common components: the expansion of the existing Barren Ridge Switching Station, construction of a new Haskell Canyon Switching Station, reconductoring of the existing 230 kV transmission line from the Barren Ridge Switching Station to Rinaldi Substation, and the addition of a new 230 kV circuit on existing towers between the Castaic Power Plant and Haskell Canyon Switching Station. Refer to Figure 8-1.

FIGURE 8-1. ACTION ALTERNATIVES


Proposed Action and Alternatives
Alternative Routes for 230 kV Transmission Line
Alternative 1
Alternative 2 - Proposed Action
Alternative 2a
Alternative 3
A - K Original Segment Labels
Project Components Applicable for each Alternative
New 230 kV Circuit
Reconductoring of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
Expansion of Existing Switching Station
New Switching Station
Expansion of Barren Ridge Switching Station
A
B
C
D
F
G
I
J
K
1
2
2a
3
California City
Mojave
Edwards Air Force Base
Los Angeles Aqueduct
California Aqueduct
Kern County
Los Angeles County
Angeles National Forest
Elizabeth Lake
Los Angeles Aqueduct
Green Valley
Lancaster
Palmdale
Castaic Power Plant
Agua Dulce
Proposed Haskell Canyon Switching Station
Santa Clarita
Rinaldi Substation
58
14
138
5
126
N
Miles 0 5 10 15 20
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS

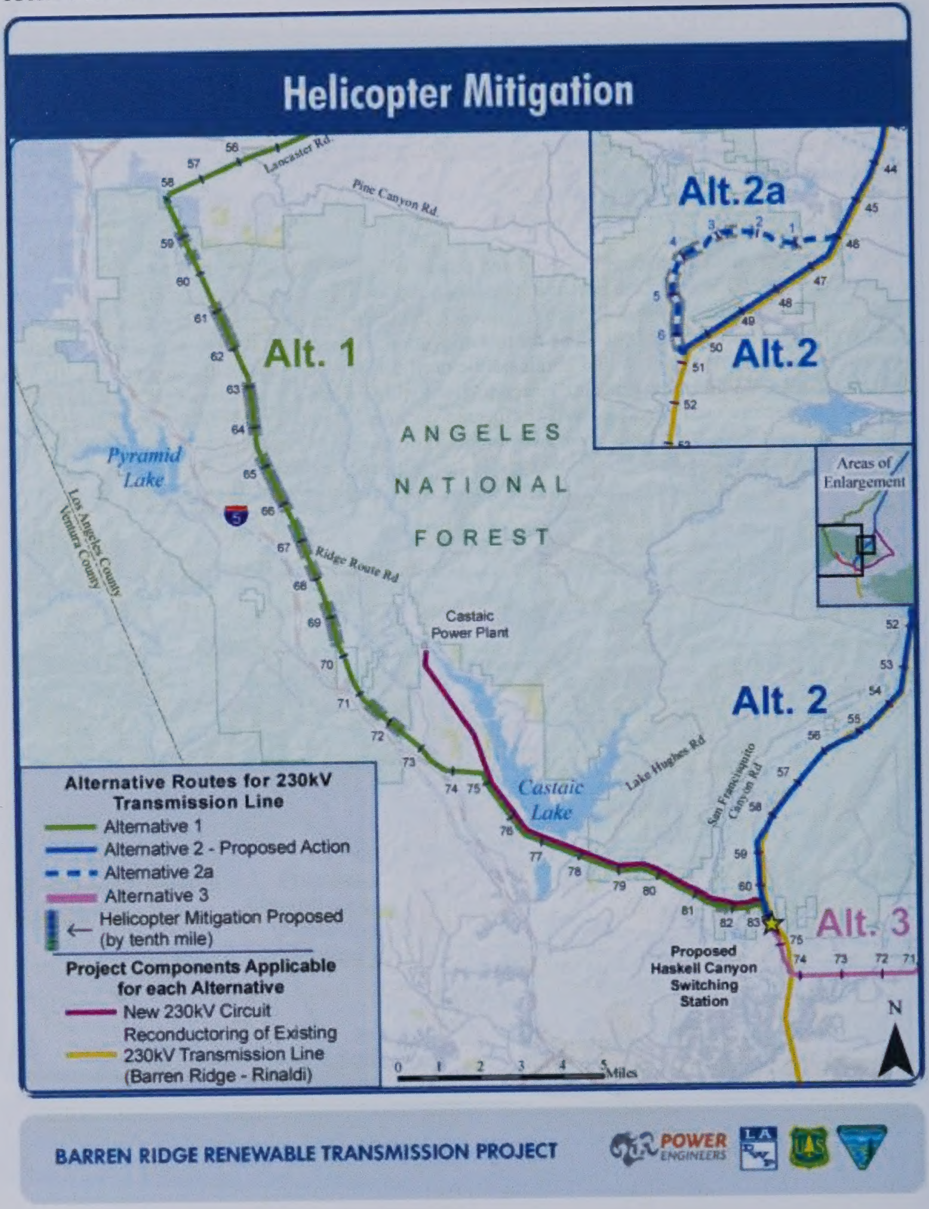
Alternative 1 (Segments A, C, and D)

The Alternative 1 230 kV double-circuit transmission line comprises the preliminary routing Segments A, C, and D, and is the longest Alternative, at 83 miles long. It would run from the Barren Ridge Switching Station to the city of the unincorporated community of Mojave, while paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines. It would continue south-southwest to parallel the Los Angeles Aqueduct to Lancaster Road, where it would travel west to the I-5 utility corridor. It would then run southeast along LADWP's existing Castaic – Rinaldi corridor to the proposed Haskell Canyon Switching Station.

Helicopter Mitigation

Within the ANF where the terrain is steep and access is limited, the USFS would require that the new double-circuit 230 kV structures be constructed with the use of helicopters (such as the Hughes 500 or Bell 212, or Sikorsky Skycrane). Refer to Figure 8-2, the Identified Helicopter Mitigation Locations Map, which illustrates the identified locations for this mitigation. The use of helicopters for the construction of transmission tower structures would eliminate the need for new access roads to structure locations, and would therefore minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites. However, the following site and ground disturbing construction activities would be required to construct the new transmission line within the identified helicopter construction areas: portable landing pads, helicopter fly yards/staging areas, tower structure vegetation clearing, guard structures at major crossings, wire stringing sites, pullouts, and temporary access roads.

FIGURE 8-2. IDENTIFIED HELICOPTER MITIGATION LOCATIONS


Helicopter Mitigation
Alt. 1
Alt. 2a
Alt. 2
Alt. 2
Alt. 3
ANGELES
NATIONAL
FOREST
Pyramid Lake
Castaic Lake
Castaic Power Plant
Lancaster Rd.
Pine Canyon Rd
Ridge Route Rd
Lake Hughes Rd
San Francisquito Canyon Rd
Los Angeles County
Ventura County
5
Proposed Haskell Canyon Switching Station
Areas of Enlargement
N
0 1 2 3 4 5 Miles
Alternative Routes for 230kV Transmission Line
Alternative 1
Alternative 2 - Proposed Action
Alternative 2a
Alternative 3
Helicopter Mitigation Proposed (by tenth mile)
Project Components Applicable for each Alternative
New 230kV Circuit
Reconductoring of Existing 230kV Transmission Line (Barren Ridge - Rinaldi)
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS

Alternative 2 (Segments A, B, and G) –LADWP's Proposed Action

Alternative 2, LADWP's Proposed Action, comprises Segments A, B, and G and is 61 miles long. It begins at the Barren Ridge Switching Station and runs south, paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines. It travels south from the unincorporated community of Mojave, California through the Antelope Valley and approximately one mile east of the Antelope Valley California Poppy Reserve before continuing onto National Forest System lands and ending at the proposed Haskell Canyon Switching Station. The entire route would remain within designated utility corridors and would parallel existing transmission lines. Refer to Section 1.2, Project Description, for a full description of this Alternative.

Alternative 2a (Segments A, B, G and 2a)

The 230 kV double-circuit transmission line in Alternative 2a comprises the preliminary routing Segments A, B, and G, but includes a re-route (Segment 2a) avoiding the unincorporated community of Green Valley. It is 63 miles long and would be very similar to the Proposed Action (Alternative 2), with 56 miles of the same alignment. Alternative 2a would begin at the Barren Ridge Switching Station and run south, paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines. It would travel south from the unincorporated community of Mojave through the Antelope Valley and approximately one mile east of the Antelope Valley California Poppy Reserve before continuing onto NFS lands and ending at the proposed Haskell Canyon Switching Station. The route would remain within designated utility corridors and would parallel existing transmission lines, with the exception of the nearly seven miles that would be routed around the unincorporated community of Green Valley. Segment 2a would create a new utility corridor through the ANF. The re-route would rejoin Segment G south of the unincorporated community of Green Valley before continuing south and ending at the proposed Haskell Canyon Switching Station.

Three-Circuit Tower Mitigation

In areas where there are ROW expansion constraints and where LADWP has existing 230 kV transmission lines, LADWP is proposing to construct three-circuit towers to carry the existing BR-RIN circuit and two new BR-HC circuits. This would avoid various impacts including the acquisition of residential property in the unincorporated communities of Willow Springs (milepost 27.1 to 27.6), and Elizabeth Lake and Green Valley (milepost 44.6 to 46 and milepost 50.8 to 51.7). This mitigation would be utilized in the same areas that were identified for Three-Circuit Tower Mitigation for the Proposed Project, with the exception of approximately five miles through the unincorporated community of Green Valley, which would not utilize this mitigation. These areas are illustrated in 1-7, the Three-Circuit Tower Mitigation Map.

Helicopter Mitigation

Within the ANF where the terrain is steep and access is limited, the USFS would require that the new double-circuit 230 kV structures be constructed by the use of helicopter. Refer to Figure 8-2, Identified Helicopter Mitigation Locations, which illustrates the identified locations for this mitigation. The use of helicopters for the construction of transmission tower structures would eliminate the need for new access roads to structure locations, and would therefore minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites. However, the following site and ground disturbing construction activities would be required to construct the new transmission line within the identified helicopter construction areas: portable landing pads, helicopter fly yards/staging areas, tower structure vegetation clearing, guard structures at major crossings, wire stringing sites, pullouts, and temporary access roads. The estimated sizes of these auxiliary sites (temporary and permanent) and additional construction information is detailed above in the description of the Proposed Action (Alternative 2) and in Appendix E.

Alternative 3 (Segments A, B, F, and I)

The proposed 230 kV double-circuit transmission line in Alternative 3 comprises preliminary routing Segments A, B, F, and I. It is 76 miles long and would begin at the Barren Ridge Switching Station and run south, paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI lines. It would travel south from the unincorporated community of Mojave through the Antelope Valley and approximately one mile east of the Antelope Valley California Poppy Reserve before continuing southeast past SCE's Antelope Substation. The route would then travel toward the city of Palmdale, parallel to SCE's existing high-voltage transmission lines. It would make a sharp turn to the south to parallel LADWP's existing Victorville – Rinaldi 500 kV and Adelanto – Rinaldi 230 kV transmission lines. This Alternative would then parallel these transmission lines west, crossing two miles of the ANF. The Alternative would then parallel LADWP's 500 kV PDCI line north to the proposed Haskell Canyon Switching Station.

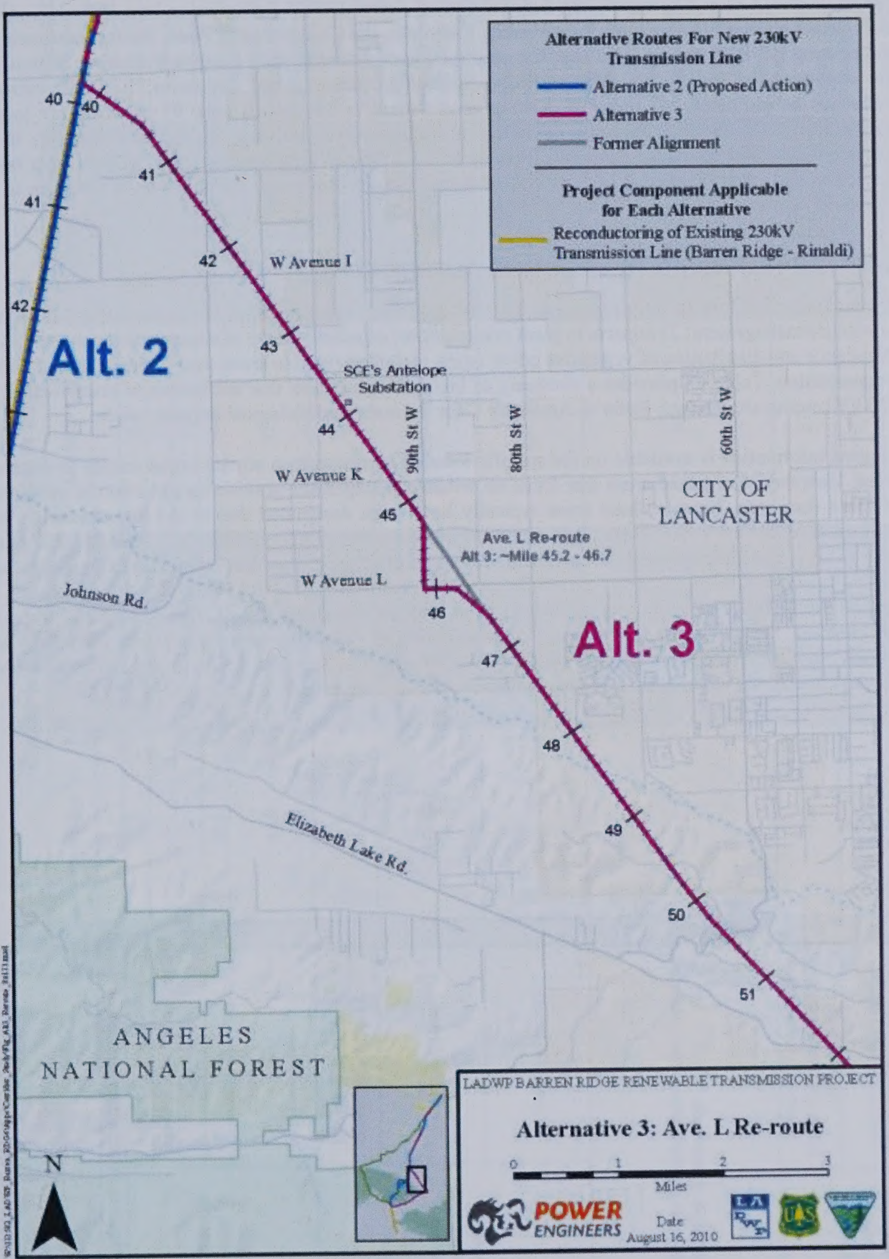
Three-Circuit Tower Mitigation

In areas where there are ROW expansion constraints and where LADWP has existing 230 kV transmission lines, LADWP is proposing to construct three-circuit towers to carry the existing BR-RIN circuit and two new BR-HC circuits. This would avoid various impacts including the acquisition of residential property in the unincorporated communities of Willow Springs (milepost 27.1 to 27.6). Please refer to the small inset map on Figure 1-7.

Avenue L Re-route

To avoid acquisition of private property, a portion of Alternative 3 from mile marker 45.2 to 46.7 was moved to parallel a smaller distribution line south along 90th Street West and then east along West Avenue "L." Refer to Figure 8-3, Avenue L Re-route on Alternative 3.

FIGURE 8-3. AVENUE L RE-ROUTE ON ALTERNATIVE 3


Alternative Routes For New 230kV Transmission Line
Alternative 2 (Proposed Action)
Alternative 3
Former Alignment
Project Component Applicable for Each Alternative
Reconductoring of Existing 230kV Transmission Line (Barren Ridge - Rinaldi)
Alt. 2
Alt. 3
40
41
42
43
44
45
46
47
48
49
50
51
W Avenue I
W Avenue K
W Avenue L
SCE's Antelope Substation
90th St W
80th St W
60th St W
CITY OF LANCASTER
Ave. L Re-route
Alt 3: ~Mile 45.2 - 46.7
Johnson Rd.
Elizabeth Lake Rd.
ANGELES NATIONAL FOREST
N
LADWP BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
Alternative 3: Ave. L Re-route
0
1
2
3
Miles
POWER ENGINEERS
Date August 16, 2010

8.2.2 No Action Alternative

Under the No Action Alternative, the construction of a new 230 kV transmission line, the addition of a new circuit on existing structures from Haskell Canyon to the Castaic Power Plant, the reconductoring of the existing BR-RIN transmission line, the construction of a new Haskell Canyon Switching Station, and the expansion of the existing Barren Ridge Switching Station would not occur. LADWP currently maintains an estimated 147 miles of existing access roads in the project area, 97 of which are located within the ANF. Current, on-going operation and maintenance activates for existing facilities in the Project area would continue. The EIS/EIR must address the resulting environmental effects from taking no action and compare them to the effects of permitting the Proposed Action or an Alternative to the Proposed Action.

8.3 IMPACT RESULTS - ROUTING ALTERNATIVES

A combination of four factors are used to identify and assess impacts within each alternative : 1) impacts to wildlife management; 2) impacts to plant communities, especially those of conservation concern; 3) the abundance and distribution of vegetative cover types, including riparian areas; and 4) the degree of habitat fragmentation. Table 47 provides a summary of biological resources that are known to occur within the 230 kV routing alternatives. Refer to Appendix C for the complete biological impacts tables.

Limited information is available on the specific location of uncommon animal communities in the study areas. However, designated areas that focus on wildlife management provide insight into the occurrence of these resources, because these areas typically have been designated due to the importance of their ecological resources. Table 6 lists plant communities of conservation concern reported for the study area. Like wildlife management areas, these community types often support rare or uncommon animal species.

Because animals are linked to specific habitat types, it is useful to know the distribution and abundance of each habitat type within the study areas. The distribution of vegetative cover types within the study area corridors are good indicators of the wildlife species present. The impact to biological resources as a result of construction and development of each alternative is summarized below.

TABLE 47. BIOLOGICAL RESOURCES ALTERNATIVE COMPARISON SUMMARY TABLE

Issues or Concerns		Alternatives for New Double-Circuit 230 kV Transmission Line*				General Comments
		Alternative 1	Alternative 2 Proposed Action	Alternative 2a[1]	Alternative 3	
Duration of Construction (months)						
Jurisdiction Crossed (miles)	*National Forest Service*	15.9	13.0	15.5	2.0	
	Bureau of Land Management	3.7	3.7	3.7	3.7	
	State Land	2.7	0.0	0.0	0.0	
	Private	60.8	44.0	43.4	69.8	
	TOTAL	83.1	60.7	62.5	75.5	Alternative 1 is considered to be the longest alignment with an additional 22 miles of corridor than Alternative 2, shortest alignment.
Ground Disturbance Estimates	*Miles of Transmission Line requiring new access roads*	7.3	0.1	0.1	0.6	Alternative 1 would require the most miles of transmission line requiring new access roads.
	Temporary (acres)	576– 599	398 – 399	405 – 409	512-520	Alternative 1 would create the greatest amount of temporary ground disturbance. Alternative 2 would create the least amount of ground disturbance.
	Permanent (acres)	120 – 199	57 – 70	59 – 75	91 – 135	Alternative 1 would create the greatest amount of permanent ground disturbance. Alternative 2 would create the least amount of temporary ground disturbance.
Miles of Transmission Line requiring Helicopter Construction		8.4	0	3.6	0.0	Within the Angeles National Forest specific areas of steep terrain and no existing access roads would require the use of helicopters during construction. Helicopters would be used to mitigate impacts associated with ground disturbing construction activities such as access roads and tower assembly.
Fish and Wildlife Resources	*Total Miles Crossed with Known Federal and State ESA Listed Species*	4.2	3.7	3.7	3.7	Alternative 1 crosses the most miles of known federally listed species.
	Miles Crossed with Known Federal and State ESA Listed Species on BLM lands	3.1 1.7 BLM (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	3.1 1.7 BLM (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	3.1 1.7 BLM (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	3.1 1.7 BLM (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	All four alternatives cross the same 3.1 miles of Desert Tortoise (DETO *Gopherus agassizii*).

Issues or Concerns		**Alternatives for New Double-Circuit 230 kV Transmission Line***				**General Comments**
		Alternative 1	**Alternative 2 Proposed Action**	**Alternative 2a[1]**	**Alternative 3**	
	Miles Crossed with Known Federal ESA Listed Species on NFS lands	0.3 0.1 NFS (California Condor) 0.2 NFS/CDFG (California Condor)	0.0	0.0	0.0	California Condor (CACO, *Gymnogyps californianus*) - Includes GPS collar flight data and does not include specific sighting or occurrence record. Alternative 1 is the only alternative that will cross known condor habitat.
	Miles Crossed with Known Federal and State ESA Listed Animal Species on Private lands	2.2 0.1 Private (California Condor) 0.6 Private (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	2.0 0.6 Private (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	2.0 0.6 Private (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	2.0 0.6 Private (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	Desert Tortoise (DETO, *Gopherus agassizii*), California Condor (CACO, *Gymnogyps californianus*)- Includes GPS collar flight data and does not include specific sighting or occurrence record. Alternative 1 crosses the most miles of known federally and State ESA listed species.
	Miles Crossed with Known USFS Animal Special Status Species	0.0	0.1 0.1 USFS (Coastal Rosy Boa) Potential habitat was observed as being present throughout the Forest during 2008-2010 surveys.	0.0	0.0	Coastal Rosy Boa (*Lichanura trivirgata roseofusca*). In addition to potential habitat observed on NFS lands, a Coastal Rosy Boa was observed outside the impact corridor. Numerous sightings of the Coast (San Diego) Horned Lizard (*Phrynosoma coronatum blainvillii*) were observed outside the impact corridor. Alternatives 2 crosses the most miles of known USFS special status species.
	Miles of Designated USFWS or CDFG Wildlife Habitats	0.0 Reconductoring – 2.9 miles, 176 acres (Coastal California Gnatcatcher)	0.0 Reconductoring – 2.9 miles, 176 acres (Coastal California Gnatcatcher)	0.0 Reconductoring– 2.9 miles, 176 acres (Coastal California Gnatcatcher)	0.0 Reconductoring– 2.9 miles, 176 acres (Coastal California Gnatcatcher)	No designated habitat is crossed within 500 feet of the centerline for the 230 kV Alternative Routes. The reconductoring portion of the proposed Project would impact USFWS designated habitat for the Coastal California Gnatcatcher (CAGN, *Polioptila californica californica*).

Issues or Concerns		Alternatives for New Double-Circuit 230 kV Transmission Line*				General Comments
		Alternative 1	Alternative 2 Proposed Action	Alternative 2a[1]	Alternative 3	
	Miles of Designated BLM Habitat	0.0	0.0.	0.0	0.0	No West Mojave Plan designated habitat for the DETO and Mohave Ground Squirrel (MGS, *Spermophilus mohavensis*) is impacted or crossed within 500 feet of the centerline.
	Miles of Designated NFS Habitat	4.4 NFS GIS modeled Habitat for the Arroyo Toad, Southwestern Willow Flycatcher, and Least Bell's Vireo	4.9 NFS GIS modeled habitat for the Arroyo Toad, Southwestern Willow Flycatcher, California Red-legged Frog, Least Bell's Vireo, and Unarmored Threespine Stickleback	4.6 NFS GIS modeled habitat for the Arroyo Toad, Southwestern Willow Flycatcher, California Red-legged Frog, Least Bell's Vireo, and Unarmored Threespine Stickleback	1.0 NFS GIS modeled habitat for the Arroyo Toad, Southwestern Willow Flycatcher, California Red-legged Frog, Least Bell's Vireo, and Unarmored Threespine Stickleback	Arroyo Toad (ARTO, *Anaxyrus californicus*), Unarmored Threespine Stickleback (UTS, *Gasterosteus aculeatus williamsoni*), *Least Bell's Vireo* (LBV, *Vireo bellii pusillus*, *Southwestern Willow Flycatcher* (SWFL, *Empidonax traillii extimus*) *and California Red-legged Frog* (*CRLF, Rana draytonii*). All modeled habitat is within the San Francisquito Creek and upland habitat. Alternative 2 would cross the greatest number of miles of designated NFS habitat.
	Miles of Avian Risk	H – 6 M – 19 L – 58	H – 1 M – 7 L – 55	H – 1 M – 11 L – 53	H – 1 M – 11 L – 65	Post-survey analysis of field data consisted of applying a series of avian-risk factors to the project segments. Alternative 1 has the most miles of high and medium avian collision risk.
	Miles of Condor Risk	H – 6 M – 33 L – 46	H – 0 M – 10 L – 53	H – 3 M – 9 L – 53	H – 1 M – 25 L – 51	Alternative 1 has the most miles of high and medium risks to CACO.
Vegetation	*Miles Crossed with Known Federal and State Threatened, Endangered, Candidate, and Proposed Plant (TECP) Species*	0.0	0.0	0.0	0.0	BRRTP 2008-2010 surveys on BLM and NFS lands did not locate TECP species.
	Miles Crossed with Known Federal Special-status Plant Species on Private lands	0.0	0.0	0.0	0.0	BRRTP 2008-2010 surveys were only conducted within the existing LADWP transmission line ROW. Access was not granted to survey private land.

Issues or Concerns	**Alternatives for New Double-Circuit 230 kV Transmission Line***				**General Comments**
	Alternative 1	**Alternative 2 Proposed Action**	**Alternative 2a[1]**	**Alternative 3**	
Miles Crossed with Known USFS Sensitive Plants	1.3 1.2 Short-joint Beavertail 0.1 Slender Mariposa Lily	3.2 1.2 Short-joint Beavertail 1.7 Slender Mariposa Lily 0.3 Slender Mariposa Lily & Short-joint Beavertail	3.1 1.1 Short-joint Beavertail 1.7 Slender Mariposa Lily 0.3 Slender Mariposa Lily & Short-joint Beavertail	1.2 1.1 Slender Mariposa Lily 0.1 Slender Mariposa Lily & Short-joint Beavertail	Alternative 2 has the most miles crossing known USFS sensitive plant species.
Acreage of Riparian Vegetation Crossed	136 acres	126 acres	119 acres	154 acres	Vegetation Crossed includes Mojave Wash Scrub, Southern Coast Live Oak Riparian Forest, Southern Cottonwood Willow Riparian Forest, Southern Sycamore Alder Riparian Woodland, Southern Riparian Scrub, Southern Willow Scrub, and Valley Oak Woodland. Alternative 3 crosses the most acres of riparian vegetation.
Acreage of Joshua Tree Woodland Crossed	334 acres	320 acres	320 acres	320 acres	Acreage was based on GIS vegetation data and ground truthed in the field. Alternative 1 crosses the greatest acreage of Joshua tree woodland.
Acreage of Riversidian Sage Scrub Crossed	448 acres	92 acres	92 acres	770 acres	Acreage was based on GIS vegetation data. Alternative 3 crosses the greatest acreage of Riversidian sage scrub.
Number of Riparian Conservation Areas (RCA) crossed (ANF Only)	151	66	94	6	Alternative 1 crosses the most RCAs, followed by Alternative 2a. Alternative 3 does not cross any RCAs.
Acres of RCA within 500 ft. Corridor (ANF Only)	99.5 acres	70.9 acres	87.6 acres	0.6 acres	Alternative 1 has the most acres of RCAs within the 500 ft. corridor.
Miles with Noxious Weeds or Invasive Species Identified within 500 ft. Corridor during BRRTP Botanical Surveys	1.4	3.6	2.9	0.1	Alternative 2 has the most miles of noxious weeds or invasive species present within the 500 ft. corridor. as identified during BRRTP 2008-2010 botanical surveys.

*All appropriate mitigation (e.g., helicopter construction, three-circuit towers) has been incorporated into the analysis for the data provided.

8.3.1 No Action Alternative

No surface disturbance would occur since the Project would not be constructed; therefore, no biological resource impacts would occur as a result of the Project. As such, none of the associated Project activities would occur and the environmental impacts associated specifically with the proposed Project would not occur. No cumulative impacts were identified under No Action.

However, throughout the entire Project area, ongoing maintenance of the existing transmission lines would continue to occur. This includes complying with regulations governing operation of transmission lines, such as maintaining access and spur roads, and trimming vegetation to maintain minimum clearance distances to the conductors and around towers. An estimated 40 miles of transmission line access and spur roads would require continuing maintenance on NFS lands, while 97 miles of additional access and spur roads off of NFS lands would require continuing maintenance. In the absence of the proposed Project or Project alternatives, biological resources will likely be impacted with continued maintenance and operation of the existing transmission lines within the Project area. Biological resources impacts can also occur during emergency work required by LADWP Water and Power System Facilities and access roads. Emergencies consist of events that pose imminent threats to the mission of LADWP and to the safety of people, the environment, or property. The mission of LADWP is to provide dependable supplies of safe, quality water and power to its customers. Hence, emergencies could comprise such activities as: restoring water or power supply to the City of Los Angeles following earthquake or landslide; containment of water contaminated by natural or deliberate means; damage to transmission lines due to fire, flood or other natural disaster; repair of pipe fractures or tunnel failures; and release of water in remote areas to mitigate flooding in populated areas. Emergency repairs to Power System facilities may include, but not be limited to, slope repairs, erosion repairs, replacement of downed poles and transmission towers, reconductoring segments of existing lines, and pulling new line. Emergency activities cannot be delayed to enable careful planning to protect the public's biological resources; however, emergency planning can incorporate efforts to protect biological resources into programmed emergency responses. Therefore, LADWP includes any measures that can prevent damage to biological resources during emergency responses into the Emergency Response Plans.

Additional biological impacts can occur from the continued use of several OHV roads and hiking trails throughout the Project area. Disturbances associated with these activities include increased noise, crushing, trash debris, and increased human presence. In addition, the northern section of the Project area has seen an increase in urban development that will continue to impact biological resources and reduce habitat.

8.3.2 Alternative 1 (Segments A, C, and D)

Alternative 1 crosses 83 miles and would require 7 miles of new access road. Within the ANF along Alternative 1, the majority of the area consists of dense, impenetrable chaparral, with very steep slopes. Sections of Alternative 1 within the ANF would be constructed by helicopter, reducing the amount of ground disturbance. However, despite the use helicopter construction on Alternative 1, this alternative results in more surface disturbance (both permanent and temporary acres) when compared to the other alternatives. This increased surface disturbance and amount of acreage proposed for disturbance would increase impacts to biological resources. Vegetation loss is estimated at 576-599 acres of temporary disturbance and 120-199 of permanent disturbance. Limited surveys were conducted along Alternative 1 due to private land (60 acres) in the north and due to the safety hazard within the ANF (15 miles) that included dense, impenetrable chaparral, with very steep slopes. Although surveys were limited on Alternative 1 more special-status species are known to occur on this alternative 1 than compared to the other action alternatives (Refer to Appendices A and B).

Permanent impacts from Alternative 1 would primarily occur from habitat change, habitat fragmentation, and disturbance (Appendix C). Habitats would be converted to earlier successional conditions due to vegetation clearing. Change would also occur from the introduction of anthropogenic structures in native habitat. Disturbance associated with human presences from access roads and maintenance activities would occur for the life of the Project. Habitat fragmentation would occur from building access roads in native habitat and interrupting flyways for avian species.

There are three special-status wildlife species that have been known to occur within the Alternative 1 impact corridor and these include (Table 48):

- American Badger
- California Condor
- Desert Tortoise

The Desert Tortoise occurs along Segment A, and this Segment is part of all action alternatives. Therefore, impacts to this species would be consistent within each Alternative. Construction activities that result in direct mortality or the degradation of habitat utilized by this species, if present, would be considered a "take" of federally and State-listed species as described above and would constitute an impact that would be authorized only through the context of a Biological Opinion issued from the USFWS.

The California condor is considered present within the proposed Project. GPS data provided by USFWS indicates that Alternative 1 has the most condor activity recorded for all alternatives (USFWS 2008b, USFWS 2009d). The construction of the towers and presence of new transmission lines may stress condors or lead to a collision depending on eventual placement and proximity to the existing line or ridgeline. It is estimated that the maximum permanent disturbance to California condor-occupied habitat would be 1.0 acre, while the maximum temporary disturbance would be 3.2 acres. It is not expected that the amount of vegetation and habitat loss that will occur on this Alternative will have a significant effect on this species, as immatures have been measured foraging over 140 miles and nesting pairs typically 31 to 44 miles in a single day (USFWS 1996b) and can likely adapt to the relatively minor change. The biggest impact could occur from construction, which may result in trash or microtrash being left behind by the crews. Any leftover trash or microtrash has the possibility to be ingested by condors, which in turn would be regurgitated for chicks to feed on, which can lead to death (USFS 2008).

Potential coastal California gnatcatcher habitat was observed along Segment D (POWER 2009a). However, due to the existence of small isolated patches of coastal scrub habitat and the high elevation of most of the Santa Clara Ranger District, the potentially suitable habitat in these areas is not expected to support California gnatcatchers (See Appendix K, Avian Habitat Assessment Report). California gnatcatchers require home ranges from one hectare (ha) to as much as nine ha—or approximately two and a half acres up to 22 acres—in size (Akcakaya and Atwood 1997, Mock 2004, POWER 2009a). While coastal California gnatcatchers will inhabit patchy habitat, research has indicated that they prefer to occupy larger habitat patches. In one study, coastal California gnatcatchers only inhabited 56% of nine habitat patches less than eight ha in size, while they were found to occupy 97% of 39 sites larger than eight ha (Atwood and Bontrager 2001). The habitat patches that were identified during 2008 surveys range from 0.16 ha to 2.06 ha. They are just under 500 meters in elevation and would be at the upper range of this species' elevation preferences (Atwood and Bontrager 2001).

There are two special-status plant species known to occur within the Alternative 1 impact corridor and these include (Table 48):

- Short-joint Beavertail
- Slender Mariposa Lily

Direct impacts to listed plant species could occur from construction activities that remove vegetation, grade soils, or cause sedimentation, including tower pad preparation, clearing helicopter staging areas, and the construction, grading, and widening of new spur roads and existing access roads. Indirect impacts could include the disruption of native seed banks through soil alterations, the accumulation of fugitive dust, increased erosion and sediment transport, and the colonization of non-native, invasive plant species. Operational impacts could include trampling or crushing due to public use of new or improved spur roads and access roads, increased erosion, and the spread and colonization of noxious weeds.

Following construction, many of the roadbeds would be revegetated and treated to control noxious weeds. During vegetation recovery, the likelihood of noxious weed invasion would increase. A weed control program would be created and implemented during the construction process and remain in place for the life of the Project permit. Project maintenance would create `vegetation disturbance throughout the life of the Project. Vegetation would not be greatly affected by occasional trampling from maintenance vehicles; however, the resulting ground disturbance and physical plant damage provide an opportunity for weed invasion. Adherence to the proposed weed management plan would reduce the likelihood of weed establishment as a result of maintenance activities. Proposed practices to reduce potential vegetation loss and noxious weed invasion would include seeding disturbed areas with appropriate local native weed-free seed mixes, using weed-free borrow materials, and inventorying and treating noxious weeds according to the developed noxious weed control plan. In the northwestern corner of Segment D along Forest Road 8N01, tumble mustard (*Sisymbrium altissimum*), red brome (*Bromus madritensis*), cheatgrass (*B. tectorum*), and shortpod mustard (*Hirschfeldia incana*) were common, but were not mapped. One small occurrence of Indian hedgemustard (*Sisymbrium orientale*) was mapped along BLM lands in Segment A. In addition, red brome and cheatgrass were common and widely scattered in this area, individual occurrences were not mapped.

Additional special status wildlife species are believed to be present within one mile of Alternative 1. This is based on their known occurrence locations and/or the availability of suitable habitat. These species include:

- Coast (San Diego) Horned Lizard
- Golden Eagle
- Least Bell's Vireo
- Loggerhead Shrike
- San Diego Black-tailed Jackrabbit
- Western Spadefoot Toad

Construction activities would also result in habitat degradation which could lead to an infestation of weed species. This would lead to a significant loss of wildlife habitat, reduction in plant diversity, potential for increased erosion, and potential for the introduction of invasive or noxious weeds. Installation and development of the proposed transmission line and activities such as site clearing and grading, construction of access roads and support facilities, and off-road travel during construction could cause direct injury or mortality to wildlife. The increased public access as a result of increased access roads may result in additional direct impact (e.g., crushing) or indirect impacts (e.g., loss of habitat). The introduction of invasive, non-native species, especially noxious weeds, is very difficult if not impossible to reverse if not detected early. For that reason, a weed management plan will provide instruction on detection and prevention protocols..

The South Coast Missing Linkages project developed a comprehensive plan for maintaining and restoring critical habitat linkages between existing reserves or protected lands (South Coast Wildlands 2008). The linkage along Alternative 1 serves to connect the Los Padres National Forest and ANF. This linkage serves the needs of many special-status species including, but not limited to, California condors, pond turtles, California spotted owl, mule deer, and mountain lion. Interstate 5 serves as a major transportation route and greatest barrier to wildlife movement and parallels Alternative 1 through the ANF. Currently, there are five areas that provide opportunities for movement of animals via riparian and upland habitats and avoiding directly crossing over Interstate 5 (South Coast Wildlands 2008). Alternative 1 would impede wildlife movement by increasing human presence during construction and creating an additional 7 miles of access roads, potentially in close proximity to riparian and upland habitats. In addition, displacement of wildlife species could occur, as species would typically seek to avoid areas where construction activities are initiated. The extent of such displacement would be partially dependent upon the type of construction activity as well as the duration and intensity. Individuals displaced from the areas cleared of native vegetation could be jeopardized if adjacent habitats are already at carrying capacity, if only less suitable habitat is available, if there is a reduction in food availability, or if the animals are exposed to an increased risk of predation. Development of and disturbance from additional access roads near riparian and upland habitats could be lowered with helicopter construction.

Actions conducted within an RCA must meet specific criteria defined by the USFS, which include both biological and watershed goals and functions. In addition, actions that result in effects considered other than neutral or beneficial may not be conducted without an amendment to the existing Forest Plan (USFS 2005). Over 150 RCAs were identified during field assessments for Alternative 1 on NFS lands. These RCAs fall within the transmission line ROW or along access roads that would be used and upgraded during construction of the proposed Project; over 100 identified RCAs are expected to actually be affected by construction on Alternative 1. Due to the topography and limited access along Alternative 1, several RCAs will be crossed at numerous locations by access roads and spur roads. Based on the anticipated number of roads needed along Alternative 1, it has the most significant acreage impacts to RCAs when compared to the other action alternatives. If helicopter mitigation is used along Alternative 1, the impacts to RCAs would be reduced due to a decreased need for road widening in areas that can be more easily accessed by helicopter.

TABLE 48. POTENTIAL BIOLOGICAL IMPACTS ASSOCIATED WITH ALTERNATIVE 1

Alternative 1 Transmission Line	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Known Special-Status Wildlife Present				
American Badger	16.9	16.9	4.4	8.3
California Condor	3.1	3.2	0.6	1.0
Desert Tortoise	24.1	24.1	3.0	3.0
NFS GIS Modeled Wildlife Habitat				
Arroyo Toad	19.6	20.4	4.4	7.8
California Red-legged Frog	17.7	18.5	4.0	7.3
Least Bell's Vireo	13.7	13.7	3.1	5.5
Southwest Willow Flycatcher	27.2	28.2	6.2	11.0
Non-modeled Wildlife Habitat				
American Badger	0.7	0.7	0.1	0.1
California Gnatcatcher	4.6	4.6	1.2	2.2
Desert Tortoise	7.8	7.8	1.0	1.0
Kit Fox	5.2	5.2	0.7	0.9
Wildlife Range				
Desert Tortoise	314.6	314.6	68.6	116.7
Mohave Ground Squirrel	83.9	83.9	10.3	10.3
Riparian Conservation Area				
Yes	42.4	47.8	8.5	14.2
Wildlife Corridor				
Yes	133.4	151.8	27.6	44.4
Known Special-Status Plant Species				
Short-joint Beavertail	14.7	17.2	2.6	3.7
Slender Mariposa Lily	0.5	0.6	0.1	0.2

Alternative 1 Transmission Line	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Joshua Trees Present				
Yes	54.6	54.6	12.1	20.9
Vegetation				
Agricultural Land	3.5	3.5	1.0	1.9
California Annual Grassland	69.3	69.3	14.0	22.7
Chamise Chaparral	77.2	85.6	15.2	24.3
Disturbed/Developed	3.4	3.4	0.4	0.5
Joshua Tree Woodland	35.9	35.9	8.6	15.2
Mojave Creosote Bush Scrub	223.0	223.0	47.0	78.4
Mojave Wash Scrub	8.3	8.3	1.0	1.0
Rabbitbrush Scrub	15.9	15.9	4.1	7.7
Riversidian Sage Scrub	63.5	70.2	12.7	19.4
Scrub Oak Chaparral	0.1	0.1	0.0	0.0
Southern Mixed Chaparral	70.3	78.8	15.3	25.8
Mapped Weed Species				
Blessed Thistle	1.0	1.2	0.2	0.3
Indian Hedgemustard	0.7	0.7	0.1	0.1
Prickly Russian Thistle	1.0	1.2	0.2	0.3
Saltcedar	0.6	0.6	0.1	0.2
Tocalote	5.2	5.2	1.3	2.3
Tree Tobacco	0.7	0.7	0.2	0.3
Yellow Sweet Clover	2.0	2.0	0.5	1.0
Riparian Communities				
Southern Coast Live Oak Riparian Forest	0.7	0.7	0.1	0.1
Southern Cottonwood Willow Riparian Forest	0.9	0.9	0.2	0.4
Southern Sycamore Alder Riparian Woodland	0.7	0.7	0.2	0.3
Southern Willow Scrub	1.1	1.3	0.2	0.3
Valley Oak Woodland	2.7	2.7	0.6	1.0
Biological Protected Area				
Castaic Lake SRA	12.4	12.4	2.2	3.4
San Andreas Rift Zone SEA	53.2	54.3	10.0	15.2
Santa Clara River SEA	2.0	2.0	0.2	0.2

* The weed species listed include those that were mapped in the survey area during Project botanical surveys from 2008 to 2010. Due to their abundance, some species were not mapped, and impacts to these species are not included.

8.3.3 Alternative 2 (Segments A, B, and G) –LADWP's Proposed Action

Construction of Alternative 2 would result in the permanent loss of 57-70 acres and temporary loss of 398-399 acres of vegetation. Alternative 2 anticipated permanent and temporary acres of disturbance are significantly less than when compared to Alternative 1 and 3. The reduced ground disturbance along Alternative 2 is due to the presence of existing access roads (both utility and OHV) and flat terrain. Due to the existing access along Alternative 2 more biological data was collected. Detailed vegetation mapping and special status plant and wildlife surveys were conducted along this Alternative from 2008-2010, including surveys along access road. While LADWP intends to avoid special-status plant communities to the maximum extent possible and would flag these known resources for avoidance, construction of the proposed Project would still result in disturbance to a variety of plant communities and wildlife habitat. This would lead to an increased loss of wildlife habitat, reduction in plant diversity, potential for increased erosion, and potential for the introduction of invasive or noxious weeds.

Installation and development of the proposed transmission line and activities such as site clearing and grading, construction of access roads and support facilities, and off-road travel during construction could cause direct injury or mortality to wildlife.

There are two special-status wildlife species that are known to be present within the Alternative 2 impact corridor and these include (Table 49):

- American Badger
- Desert Tortoise

The Desert Tortoise occurs along Segment A, and this Segment is part of all action alternatives. Therefore, impacts to this species would be consistent within each Alternative. Construction activities that result in direct mortality or the degradation of habitat utilized by this species, if present, would be considered a "take" of federally and State-listed species as described above and would constitute an impact that would be authorized only through the context of a Biological Opinion issued from the USFWS.

There are three special-status plant species that are known to occur within the Alternative 2 impact corridor and these include (Table 49):

- Short-joint Beavertail
- Slender Mariposa Lily

Direct impacts to listed plant species would primarily be related to ground disturbing activities, including, but not limited to, tower pad preparation and construction areas, tower removal sites, pulling and tensioning sites, assembly yards, and areas subject to grading for new access and/or spur roads. These impacts include trampling or crushing from heavy equipment, vehicles, and foot traffic and alterations to the native seed bank due to soil compaction and modifications to existing hydrological conditions. Indirect impacts to listed plant species can occur from the accumulation of fugitive dust related to Project construction, the introduction and proliferation of non-native invasive plants, and increased soil compaction, erosion, and sedimentation.

Direct impacts to native vegetation communities would occur as a result of the removal of vegetation during construction activities. These ground-disturbing construction activities would include clearing and grading for tower pad preparation, tower removal sites, pulling and tensioning sites, and construction, grading, and widening of new spur roads and existing access roads. Table 49 presents the approximate temporary and permanent impacts to vegetation communities that would occur from implementation of Alternative 2.

There are also additional wildlife species that are believed to be present within Alternative 2 but which, due to their known occurrence locations and/or the availability of suitable habitat under the transmission line, are not believed to be present within the actual impact corridor. These species include:

- Coast (San Diego) Horned Lizard
- Golden Eagle
- Loggerhead Shrike
- Southwestern Pond Turtle

Alternative 2 parallels San Francisquito Creek for 5 miles and finally crosses the creek before entering the unincorporated community of Green Valley. The point the proposed centerline crosses the creek is from ridgeline to ridgeline. No access roads will be used during construction for Alternative 2 that cross San Francisquito Creek. However, it is important to note that all designated USFWS wildlife habitat and USFS modeled GIS habitat within the ANF is located along San Francisquito Creek. For the 5 miles that Alternative 2 parallels San Francisquito Creek it is well outside the 500-foot proposed transmission line corridor (see Appendix A and B). During several field surveys it was determined that amphibian species would not be able to access Alternative 2 due to steep ridgeline that separates the two. Disturbance to these habitats could occur through indirect impacts like displacement or disturbance from noise and associated construction activities. Displacement of wildlife species could occur, as species would typically seek to avoid areas where construction activities are initiated. The extent of such displacement would be partially dependent upon the type of construction activity as well as the duration and intensity. Individuals displaced from the areas cleared of native vegetation could be jeopardized if adjacent habitats are already at carrying capacity, if only less suitable habitat is available, if there is a reduction in food availability, or if the animals are exposed to an increased risk of predation. Alternative 2 corridor is utilized on a regular basis by LADWP maintenance crews and by the public for the use of off-road vehicles. Wildlife movement would not be directly impaired from the additional transmission line right-of-way within this corridor or experience the magnitude of mortality risk that is associated with new corridors. However, the transmission line right-of-way would likely cause some behavioral responses in some species (such as avoidance or alteration of migration route) that may cause added stress during an ecologically stressful period (migration).

Construction activities could result in accidental exposure to contaminants or fire or increased legal and illegal killing of wildlife. Accidental spills during equipment maintenance or refueling could result in temporary exposure to hazardous contaminants. Because spill prevention plans would be in place and impacted areas would be immediately reclaimed, and exposure would be temporary and restricted to the site of spill, impacts to wildlife would be unlikely. Accidental fires associated with construction and maintenance vehicles could result in the temporary loss of habitat. LADWP shall develop and implement a multi-agency Construction and Maintenance Fire Prevention Plan for the BRRTP and monitor construction activities to ensure implementation and effectiveness of the plan. This Fire Prevention Plan is applicable to the entirety of the Proposed Action and/or Alternatives during all construction and maintenance activities. Plan reviewers shall include Angeles National Forest, BLM, CAL FIRE Contract Counties, and City fire agencies.

Direct impacts to RCAs are anticipated to occur along Alternative 2. Although the proposed centerline will avoid RCAs, access roads would parallel or cross 66 RCAs, 50 of which are expected to actually be affected by construction. Measures will be implemented to reduce impacts to RCAs.

Direct impacts associated with the introduction of noxious weeds could occur when noxious weeds become established in an area. These invasive plant species can cause a permanent or long-lasting change to the environment by increasing vegetative cover, creating a dense layer that prevents native vegetation from germinating, altering the edaphic and hydrological conditions through nitrogen fixation (as in Spanish broom [*Spartium junceum*]), or draining the water table (as in giant reed [*Arundo donax*]). Noxious weeds can create such an unfavorable environment for wildlife that associate, mutualistic species necessary for native plant life cycles, such as seed dispersers, fossorial mammals, or pollinators, are lost from the area. Indirect impacts attributed to the colonization of noxious weeds could include a gradual decrease in natural biodiversity as noxious weed infestations may extirpate native plant populations.

A "shoofly," or temporary alternative transmission line, would be required for construction of Alternative 2 around the unincorporated community of Green Valley area to maintain power while the permanent structures are being upgraded. Installation of the shoofly would help to avoid potential impacts to the hydroelectric power plants north of the Barren Ridge Switching Station. This shoofly would be approximately 7.5 miles long from near LADWP's Power Plant 1 to just north of Johnson Road in Elizabeth Lake and would constitute approximately 4.18 acres of temporary disturbance. The proposed corridor is located almost entirely directly adjacent to San Francisquito Canyon Road, and construction would predominantly occur in areas that are already disturbed or developed. Most pole locations would be accessible from San Francisquito Road, but locations that are not directly off the road may require road grading for access. Although there are some areas of agricultural and southern mixed chaparral habitat types where the shoofly leaves the road, overall habitat quality is estimated to be low. Some habitat is present to support southwestern willow flycatcher, arroyo toad, California red-legged frog, least Bell's vireo, and unarmored threespine stickleback, but there are no known special-status wildlife occurrences or wildlife corridors in this area. This portion partially falls within the San Andreas Rift Zone SEA and the Santa Clara River SEA. It is estimated that approximately 81 trees will require trimming or removal along this route within 28 distinct sections of road. These mostly consist of *Quercus* or *Pinus* species. Approximately 27 of these trees are within NFS boundaries (Table 50).

TABLE 49. POTENTIAL BIOLOGICAL IMPACTS ASSOCIATED WITH ALTERNATIVE 2

Alternative 2 Transmission Line	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Known Special-Status Wildlife Present				
American Badger	12.4	12.4	1.5	1.5
Desert Tortoise	24.1	24.1	3.0	3.0
USFS GIS Modeled Wildlife Habitat				
Arroyo Toad	25.2	26.4	4.8	6.9
California Red-legged Frog	20.0	21.2	4.0	6.0
Least Bell's Vireo	23.9	25.1	4.5	6.5
Southwest Willow Flycatcher	34.3	35.5	6.3	9.3
Unarmored Threespine Stickleback	7.2	7.2	1.8	3.2
Non-modeled Wildlife Habitat				
American Badger	0.7	0.7	0.1	0.1
Desert Tortoise	10.4	10.4	1.3	1.3
Kit Fox	6.5	6.5	0.8	0.8
Wildlife Range				
Desert Tortoise	276.9	276.9	34.1	34.1
Mohave Ground Squirrel	83.9	83.9	10.3	10.3
Riparian Conservation Area				
Yes	50.6	51.8	9.0	12.4
Known Special-Status Plant Species				
Short-joint Beavertail	9.8	9.8	1.5	1.9
Slender Mariposa Lily	13.0	13.0	2.1	3.0
Joshua Trees Present				
Yes	85.8	85.8	10.6	10.6
Vegetation				
Agricultural Land	78.9	78.9	10.3	11.1
California Annual Grassland	24.4	24.4	3.9	5.3
Chamise Chaparral	38.6	39.4	6.9	10.1
Disturbed/Developed	35.4	35.4	6.6	10.1
Joshua Tree Woodland	34.4	34.4	4.2	4.2
Mojave Creosote Bush Scrub	149.9	149.9	18.5	18.5
Mojave Wash Scrub	8.3	8.3	1.0	1.0
Riversidian Sage Scrub	10.1	10.1	1.7	2.4
Southern Mixed Chaparral	13.0	13.0	2.9	5.1
Mapped Weed Species				
Blessed Thistle	0.7	0.7	0.1	0.1
Cheatgrass	0.7	0.7	0.1	0.1
Common Gum Cistus	0.7	0.7	0.1	0.1
Cretan Rockrose	1.3	1.3	0.2	0.2
Indian Hedgemustard	10.4	10.4	1.37	1.52

Alternative 2 Transmission Line	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Prickly Russian Thistle	2.6	2.6	0.4	0.6
Saltcedar	0.7	0.7	0.1	0.1
Smilograss	3.9	3.9	0.6	0.7
Spanish Broom	2.0	2.0	0.2	0.2
Tocalote	3.9	3.9	0.5	0.5
Tree tobacco	1.3	1.3	0.3	0.4
Riparian Communities				
Southern Coast Live Oak Riparian Forest	3.0	3.4	0.6	0.7
Southern Riparian Scrub	0.7	0.7	0.2	0.3
Southern Sycamore Alder Riparian Woodland	2.3	2.3	0.5	0.9
Biological Protected Area				
San Andreas Rift Zone SEA	12.4	12.4	2.7	4.6
Santa Clara River SEA	4.6	4.6	1.0	1.8

* The weed species listed include those that were mapped in the survey area during Project botanical surveys from 2008 to 2010. Due to their abundance, some species were not mapped, and impacts to these species are not included.

TABLE 50. POTENTIAL BIOLOGICAL IMPACTS ASSOCIATED WITH THE TEMPORARY TRANSMISSION LINE ALTERNATIVE

Temporary Transmission Line Alternative	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
NFS GIS Modeled Wildlife Habitat				
Southwestern Willow Flycatcher	0.9	0.9	0.0	0.0
Unarmored Threespine Stickleback	0.1	0.1	0.0	0.0
Arroyo Toad	0.8	0.8	0.0	0.0
California Red-legged Frog	0.7	0.7	0.0	0.0
Least Bell's Vireo	0.4	0.4	0.0	0.0
Riparian Conservation Area				
Yes	0.3	0.3	0.0	0.0
Vegetation				
Agricultural Land	0.8	0.8	0.0	0.0
Disturbed/Developed	2.8	2.8	0.0	0.0
Southern Mixed Chaparral	0.3	0.3	0.0	0.0
Known Weed Species*				
Hairy Rockrose	0.1	0.1	0.0	0.0
Smilograss	0.1	0.1	0.0	0.0
Common Gum Cistus	0.1	0.1	0.0	0.0
Spanish Broom	0.2	0.2	0.0	0.0
Riparian Community				
Southern Sycamore Alder Riparian Woodland	0.2	0.2	0.0	0.0
Biological Protected Area				
San Andreas Rift Zone SEA	0.4	0.4	0.0	0.0
Santa Clara River SEA	0.1	0.1	0.0	0.0

* The weed species listed include those that were mapped in the survey area during Project botanical surveys from 2008 to 2010. Due to their abundance, some species were not mapped, and impacts to these species are not included.

8.3.4 Alternative 2a (Segments A, B, G, and 2a)

Alternative 2a actions are consistent with implementing Alternative 2 due to the similar Segments (A, B, and G). The main difference is Segment 2a, which skirts around the unincorporated community of Green Valley. With the addition of the localized route and helicopter mitigation, Alternative 2a still has slightly more temporary and permanent impacts to vegetation communities when compared to Alternative 2. For instance, while Alternative 2 would have a greater impact on disturbed/developed areas and a slightly higher impact on southern sycamore alder riparian woodland vegetation (0.6 acre temporary impact, 0.1 acre permanent impact), Alternative 2a would have a greater impact on interior live oak chaparral (not present on Alternative 2), scrub oak chaparral (not present on Alternative 2), and southern mixed chaparral (18.5 acres temporary impact, 5.7 acres permanent impact) (Tables 51 and 52). Limited access to Segment 2a and the steep topography also significantly increased impacts to the Southern mixed chaparral vegetation community. Temporary and direct acreage impacts to Southern mixed chaparral are doubled by the localized route. An additional 2.76 acres of permanent impacts to Live Oak vegetation communities have been identified with the localized route. This would lead to a significant loss of wildlife habitat, reduction in plant diversity, potential for increased erosion, and potential for the introduction of invasive or noxious weeds. Installation and development of the proposed transmission line and activities such as site clearing and grading, construction of access roads and support facilities, and off-road travel during construction could cause direct injury or mortality to wildlife. The increased public access as a result of increased access roads (estimated 3.6 miles) may result in additional direct impact (e.g., crushing) or indirect impacts (e.g., loss of habitat).

The localized route also parallels or crosses several RCAs. By avoiding the unincorporated community of Green Valley, permanent impacts to RCAs increase by 16.7 acres for a total of 87.6 permanent acres for Alternative 2a. Helicopter construction will reduce ground disturbance; however, RCAs will still be impacted. Besides Segment 2a the remainder of Alternative 2a shares the same centerline as Alternative 2, therefore the impacts are the same. Please refer to Alternative 2 for a detailed discussion of impacts.

There are two special-status wildlife species that are known to be present within the Alternative 2a impact corridor and these include (Table 51):

- American Badger
- Desert Tortoise

The Desert Tortoise occurs along Segment A, and this Segment is part of all action alternatives. Therefore, impacts to this species would be consistent within each Alternative. Construction activities that result in direct mortality or the degradation of habitat utilized by this species, if present, would be considered a "take" of federally and State-listed species as described above and would constitute an impact that would be authorized only through the context of a Biological Opinion issued from the USFWS.

There are two special-status plant species that are known to occur within the Alternative 2a impact corridor and these include (Table 51):

- Short-joint Beavertail
- Slender Mariposa Lily

Direct impacts to listed plant species would primarily be related to ground disturbing activities, including, but not limited to, tower pad preparation and construction areas, tower removal sites, pulling and tensioning sites, assembly yards, and areas subject to grading for new access and/or spur roads. These impacts include trampling or crushing from heavy equipment, vehicles, and foot traffic and alterations to the native seed bank due to soil compaction and modifications to existing hydrological conditions. Indirect impacts to listed plant species can occur from the accumulation of fugitive dust related to Project construction, the introduction and proliferation of non-native invasive plants, and increased soil compaction, erosion, and sedimentation.

Direct impacts to native vegetation communities would occur as a result of the removal of vegetation during construction activities. These ground-disturbing construction activities would include clearing and grading for tower pad preparation, tower removal sites, pulling and tensioning sites, and construction, grading, and widening of new spur roads and existing access roads. Table 52 presents the approximate temporary and permanent impacts to vegetation communities that would occur from implementation of Alternative 2a.

Direct impacts associated with the introduction of noxious weeds could occur when noxious weeds become established in an area, potentially causing a permanent or long-lasting change to the environment by increasing vegetative cover, creating a dense layer that prevents native vegetation from germinating, altering the edaphic and hydrological conditions through nitrogen fixation, or draining the water table. Noxious weeds can create such an unfavorable environment for wildlife that associate, mutualistic species necessary for native plant life cycles, such as seed dispersers, fossorial mammals, or pollinators, are lost from the area. Indirect impacts attributed to the colonization of noxious weeds could include habitat degradation and a gradual decrease in natural biodiversity as noxious weed infestations may extirpate native plant populations. Non-native weed seeds may be transported through natural means (e.g., wind dispersal, animal dispersal) or by construction (e.g., vehicle tires, vehicle undercarriages). Some of the invasive weeds known to be present along Alternative 2a include cheatgrass, saltcedar, Spanish broom, tocalote, and tree tobacco.

Direct impacts to RCAs are anticipated to occur along Alternative 2a. Although the proposed centerline will avoid RCAs, access roads would parallel or cross 66 RCAs where Alternative 2a parallels Alternative 2 and an additional 28 RCAs along Tule Ridge from the intersection with the proposed transmission line and east to San Francisquito Canyon. Of these, 78 RCAs are anticipated to be affected by construction. Measures will be implemented to reduce impacts to RCAs.

There are also additional wildlife species that are believed to be present within Alternative 2a but which, due to their known occurrence locations and/or the availability of suitable habitat under the transmission line, are not believed to be present within the actual impact corridor. These include:

- Coast (San Diego) Horned Lizard
- Golden Eagle
- Loggerhead Shrike

TABLE 51. POTENTIAL BIOLOGICAL IMPACTS ASSOCIATED WITH ALTERNATIVE 2A

Alternative 2a Transmission Line	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Known Special-Status Wildlife Present				
American Badger	12.4	12.4	1.5	1.5
Desert Tortoise	24.1	24.1	3.0	3.0
USFS GIS Modeled Wildlife Habitat				
Arroyo Toad	19.4	20.6	3.9	6.0
California Red-legged Frog	17.4	18.6	3.7	5.7
Least Bell's Vireo	22.6	23.8	4.3	6.4
Southwest Willow Flycatcher	31.9	33.4	6.2	9.5
Unarmored Three-spine Stickleback	6.5	6.5	1.7	3.2
Non-modeled Wildlife Habitat				
American Badger	0.7	0.7	0.1	0.1

Alternative 2a Transmission Line	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Desert Tortoise	10.4	10.4	1.3	1.3
Kit Fox	6.5	6.5	0.8	0.8
Wildlife Range				
Desert Tortoise	276.9	276.9	34.1	34.1
Mohave Ground Squirrel	83.9	83.9	10.3	10.3
Riparian Conservation Area				
Yes	57.0	59.6	10.3	15.6
Known Special-Status Plant Species				
Short-joint Beavertail	9.1	9.1	1.4	1.8
Slender mariposa lily	13.0	13.0	2.1	3.0
Joshua Trees Present				
Yes	85.8	85.8	10.6	10.6
Vegetation				
Agricultural Land	78.9	78.9	10.3	11.1
California Annual Grassland	24.4	24.4	3.9	5.3
Chamise Chaparral	38.6	39.4	6.9	10.1
Disturbed/Developed	20.5	20.8	4.0	6.6
Interior Live Oak Chaparral	5.2	5.6	1.1	2.1
Joshua Tree Woodland	34.4	34.4	4.2	4.2
Mojave Creosote Bush Scrub	149.9	149.9	18.5	18.5
Mojave Wash Scrub	8.3	8.3	1.0	1.0
Riversidian Sage Scrub	10.1	10.1	1.7	2.4
Scrub Oak Chaparral	3.1	3.2	0.8	1.5
Southern Mixed Chaparral	29.1	31.5	6.1	10.8
Mapped Weed Species				
Blessed Thistle	0.7	0.7	0.1	0.1
Cheatgrass	0.7	0.7	0.1	0.1
common gum cistus	0.7	0.7	0.1	0.1
Cretan rockrose	1.3	1.3	0.2	0.2
Indian hedgemustard	10.4	10.4	1.4	1.5
Prickly Russian Thistle	2.0	2.0	0.2	0.2
Saltcedar	0.7	0.7	0.1	0.1
Smilograss	2.0	2.0	0.2	0.2
Spanish broom	2.0	2.0	0.2	0.2
Tocalote	3.9	3.9	0.5	0.5
Tree tobacco	1.3	1.3	0.3	0.4
Riparian Community				
Southern Coast Live Oak Riparian Forest	3.0	3.4	0.6	0.7
Southern Riparian Scrub	0.7	0.7	0.2	0.3
Southern Sycamore Alder Riparian Woodland	1.7	1.7	0.4	0.8
Biological Protected Area				
San Andreas Rift Zone SEA	12.4	12.4	2.7	4.6
Santa Clara River SEA	3.3	3.3	0.9	1.6

* The weed species listed include those that were mapped in the survey area during Project botanical surveys from 2008 to 2010. Due to their abundance, some species were not mapped, and impacts to these species are not included.

8.3.5 Alternative 3 (Segments A, B, F, and I)

Alternative 3 could permanently impact 91-135 acres and temporarily impact 512-520 acres of vegetation, including 10 acres of permanent disturbance to Joshua Trees (Table 52). This would lead to a significant loss of wildlife habitat, reduction in plant diversity, potential for increased erosion, and potential for the introduction of invasive or noxious weeds. Installation and development of the proposed transmission line and activities such as site clearing and grading, construction of access roads and support facilities, and off-road travel during construction could cause direct injury or mortality to wildlife. A total of 69 acres is private land and a little under 1 mile of new access roads would need to be built. Alternative 3 crosses ANF lands for a small distance (2 miles) along Segment I. Therefore, direct impacts to RCAs would be minimal. Although the proposed centerline will avoid RCAs, access roads would parallel or cross six RCAs, five of which would be affected under conventional construction. Measures will be implemented to reduce impacts to RCAs. The most significant biological resource difference between Alternative 3 and the other action alternatives is that Alternative 3 corridor crosses 154 acres of riparian vegetation, more than all other alternatives (Appendix B). However, Alternative 3 crosses the least number of RCAs, six compared to the 151, 66, and 94 RCAs that Alternatives 1, 2, and 2a cross, respectively. Alternative 3 also has the fewest cumulative miles crossing through areas with recorded sensitive plant species and the fewest miles crossing through NFS designated wildlife habitat.

This Alternative also crosses the Santa Monica Conservancy's Mountains Conservation Property. This property provides habitat for a variety of protected species including, but not limited to, the mountain lion, badger, and spotted owl. The land is located along Segment I and serves as a transition between coastal and desert ranges. The property does not allow access to the public and therefore limits disturbance to the species and habitat that are present within the property. Alternative 3 would bisect through the middle of this property, impacting species through access roads and increased human activity for construction and maintenance activities.

There are two special-status wildlife species known to occur within the Alternative 3 impact corridor and these include (Table 52):

- American Badger
- Desert Tortoise

The Desert Tortoise occurs along Segment A, and this Segment is part of all action alternatives. Therefore, impacts to this species would be consistent within each Alternative. Construction activities that result in direct mortality or the degradation of habitat utilized by this species, if present, would be considered a "take" of federally and State-listed species as described above and would constitute an impact that would be authorized only through the context of a Biological Opinion issued from the USFWS.

There is also one additional wildlife species that is believed to be present within Alternative 3 but which, due to its known occurrence locations and/or the availability of suitable habitat under the transmission line, is not believed to be present within the actual impact corridor. This is the Unarmored Threespine Stickleback.

There are two special-status plants known to occur within the Alternative 3 impact corridor and these include (Table 52):

- Short-joint Beavertail
- Slender Mariposa Lily

The South Coast Missing Linkages project has also developed a comprehensive plan for maintaining and restoring critical habitat linkages between existing reserves (South Coast Wildlands 2008). The linkage along Alternative 3 serves to connect the San Gabriel and Castaic ranges. The Santa Clara River provides breeding sites and traveling routes for a variety of wildlife, and supports other critical natural processes such as natural flood control, recharge of groundwater basin, and nutrient cycling (South Coast Wildlands 2008). State Route 14 and Sierra Highway are major transportation routes and pose the greatest barriers to wildlife movement between the northern and southern section of the ANF. Therefore, the South Coast Missing Linkages has identified routes for species to migrate from the ANF north of State Route 14 through the Mountains Conservation Property to the ANF south of State Route 14. Dispersal of wildlife can occur due to construction noise, ground vibrations, general construction presence, or loss of habitat. Indirect injury or mortality can be caused by leaving microtrash on-site, such that wildlife may attempt to eat it or feed it to their young, as is the case with the Federal Endangered California condor. Avian collisions and electrocutions can occur through poor placement of transmission towers and by neglecting to put bird guards onto transmission lines, respectively.

Project implementation along Alternative 3 may lead to direct or indirect spread of non-native noxious weed species. Weeds may be directly spread by becoming attached to Project vehicles or equipment, particularly on their wheels. This can transport weeds long distances to areas where they are not currently established or can increase the size of existing populations. Additionally, weed seeds may be spread through construction effects, such as ground disturbance from clearing and grading, expansion of access roads, construction of spur roads, and road maintenance; the use of vehicles, construction equipment, or earth materials contaminated with non-native plant seed; use of straw bales or wattles that contain seeds of non-native plant species; and enhanced public access to the Project corridor during and after construction. Some of these direct effects would be related to construction and would not be threats after construction; however, other effects, such as increased public access or long-term maintenance access, would remain after construction and continue to raise the risk of transporting and spreading noxious weeds. The establishment of noxious weeds may be indirectly contributed to by construction by degrading habitat for existing native plant species. This can occur through the spread of excessive dust onto plants, reducing their vigor by reducing photosynthesis, or by compacting soil, reducing the amount of water that is able to penetrate the soil surface to sufficiently sustain native plants. Reduced competition from native plants would indirectly contribute to the establishment of invasive plant species.

TABLE 52. POTENTIAL BIOLOGICAL IMPACTS ASSOCIATED WITH ALTERNATIVE 3

Alternative 3 Transmission Line	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Known Special-Status Wildlife Present				
American Badger	12.4	12.4	1.5	1.5
Desert Tortoise	24.1	24.1	3.0	3.0
USFS GIS Modeled Wildlife Habitat				
Arroyo Toad	6.5	6.5	1.7	3.4
California Red-legged Frog	5.9	5.9	1.5	2.9
Least Bell's Vireo	7.2	7.2	1.9	3.5
Southwest Willow Flycatcher	7.8	7.8	2.0	3.8
Unarmored Three-spine Stickleback	1.3	1.3	0.3	0.6
Non-modeled Wildlife Habitat				
American Badger	0.7	0.7	0.1	0.1
Desert Tortoise	10.4	10.4	1.3	1.3
Kit Fox	6.5	6.5	0.8	0.8
Wildlife Range				
Desert Tortoise	294.5	294.5	38.3	41.8
Mohave Ground Squirrel	83.9	83.9	10.3	10.3
Riparian Conservation Area				
Yes	3.3	3.3	0.9	1.6

Alternative 3 Transmission Line	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Wildlife Corridor				
Yes	44.9	44.9	11.5	21.4
Known Special-Status Plant Species				
Short-joint Beavertail	3.8	5.0	1.1	1.7
Slender Mariposa Lily	10.3	11.5	2.8	4.9
Joshua Trees Present				
Yes	85.8	85.8	10.6	10.6
Vegetation				
Agricultural Land	66.5	66.5	8.2	8.2
California Annual Grassland	58.6	58.6	11.4	18.4
Chamise Chaparral	11.5	11.5	2.9	5.4
Disturbed/Developed	20.6	20.6	4.6	7.9
Joshua Tree Woodland	34.4	34.4	4.2	4.2
Mojave Creosote Bush Scrub	149.9	149.9	18.5	18.5
Mojave Wash Scrub	8.3	8.3	1.0	1.0
Riversidian Sage Scrub	100.0	107.0	24.6	42.7
Scrub Oak Chaparral	35.6	36.8	9.3	17.0
Southern Mixed Chaparral	19.5	19.5	4.7	8.5
Mapped Weed Species				
Indian Hedgemustard	0.7	0.7	0.1	0.1
Riparian Communities				
Southern Riparian Scrub	6.3	6.3	1.5	2.8
Southern Sycamore Alder Riparian Woodland	1.9	1.9	0.5	0.9
Biological Protected Area				
San Andreas Rift Zone SEA	28.0	28.0	6.7	12.1

* The weed species listed include those that were mapped in the survey area during Project botanical surveys from 2008 to 2010. Due to their abundance, some species were not mapped, and impacts to these species are not included.

9.0 Cumulative Impacts

9.1 INTRODUCTION

Cumulative effects are those effects that result from incremental impacts of the proposed action when added to other past, present and reasonably foreseeable future actions. Analysis of cumulative effects places project-specific impacts into a broader context that takes into account the full range of impacts of actions taking place over a given space and time. Cumulative effects may be considered a significant impact to the environment, as degradation of important resources may result from the combined, incremental effects of actions. Cumulative effects may result from individually minor or insignificant actions, which collectively may be considered significant as they accumulate over time and space from one or more actions or sources.

9.1.1 Impact Area

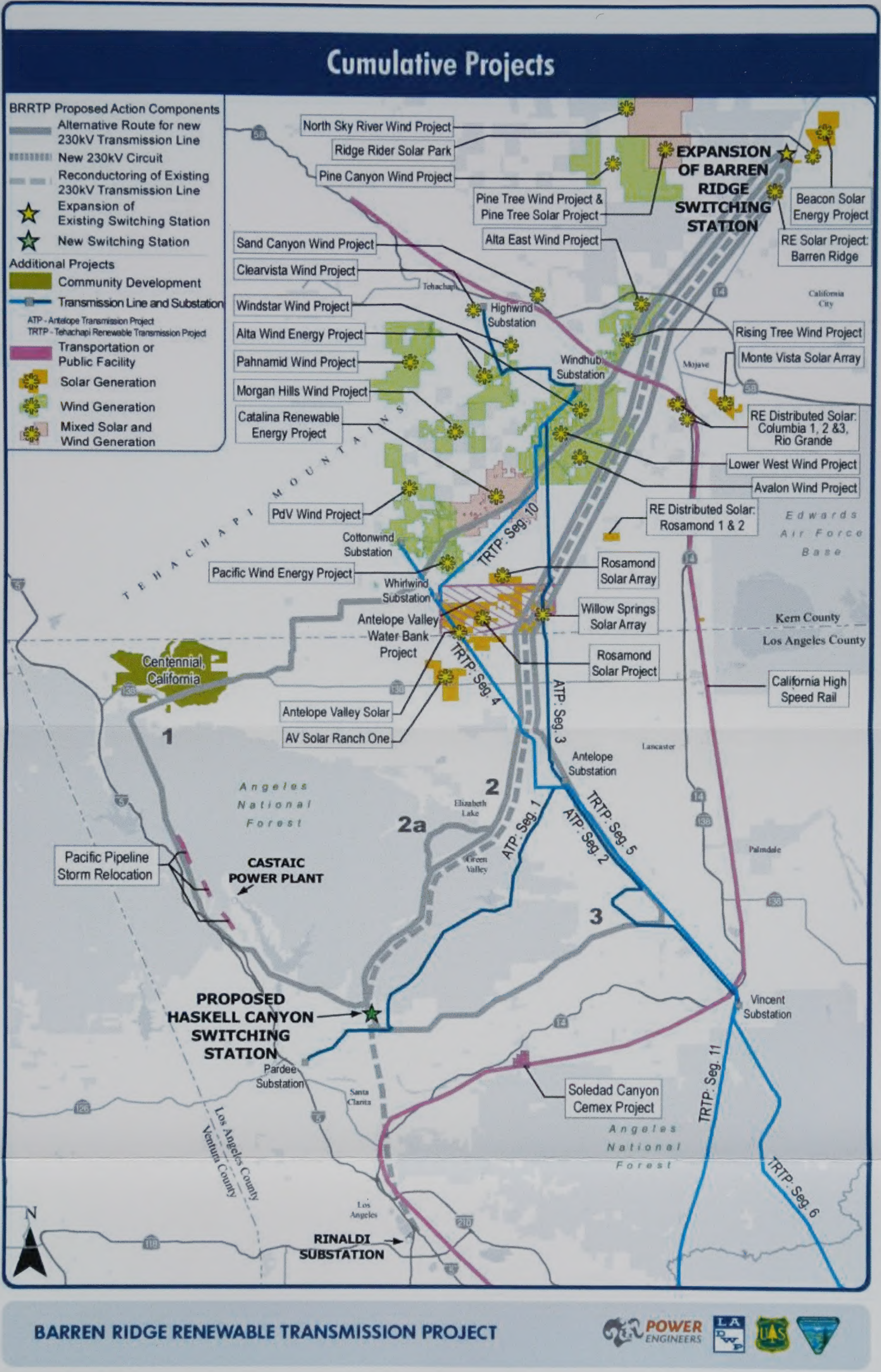
The region of influence for BRRTP's biological cumulative effects is defined as any project within five miles of the proposed segments, as well as any large projects in BRRTP's vicinity (i.e., solar development, wind development) that are farther than five miles from its Project area. This five-mile boundary is assumed to account for impacts to most plants' dispersion area and most animals' migration corridors or individual home ranges. In the case of the California condor, which will often fly very long distances while foraging, a twenty-mile region of influence will be implemented.

9.1.2 Reasonably Foreseeable Future Actions

The cumulative projects list is used to provide a general context for the cumulative effects. This list includes present and reasonably foreseeable future actions in the Project vicinity that have the potential to combine with the Proposed Action or Alternatives. While a distinct impact area for cumulative impacts and specific present and reasonably foreseeable actions is determined individually for each resource area, collectively, the projects listed below represent the major known and anticipated activities that may occur in the general Project area. The Cumulative Projects Map (Figure 9-1) illustrates the location of energy infrastructure and other major projects in reference to the Proposed Action and Alternatives.

It is expected that BRRTP's cumulative effects would apply to both special-status plant and wildlife species. These species may be listed according to regulations set by the State or Federal Endangered Species Acts, Bureau of Land Management (BLM), California Department of Fish and Game (CDFG), United States Forest Service (USFS), or other groups such as California Native Plant Society (CNPS) and Western Bat Working Group. Five sensitive plant species were observed within the ANF, while none were identified on areas surveyed outside the ANF. However, there may be additional sensitive plants on the ANF or outside the ANF that may be affected by BRRTP, including State or Federal listed species, which were not identified during surveys, or may occur on lands not surveyed. These species may in turn be affected by other past, present, or future projects such as those described in Chapter 5 of the DEIS/EIR, especially those which occur in the ANF. Additionally, there is the potential for numerous special-status animals to occur and be affected by BRRTP. Many of these are known to occur within the project area due to recent observations, and some of them are listed at the State and/or Federal level, such as the desert tortoise (*Gopherus agassizii*) in the Mojave Desert, the unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*) in Bouquet Creek, or the coastal California gnatcatcher (*Polioptila californica californica*) in the coastal sage scrub at the southern end of BRRTP. All three of these species, along with many other special-status terrestrial, aquatic, and/or aerial species, may be impacted by the cumulative effects of BRRTP with other projects in the area that require similar actions over these species' ranges.

FIGURE 9-1. CUMULATIVE PROJECTS


Cumulative Projects
BRRTP Proposed Action Components
Alternative Route for new 230kV Transmission Line
New 230kV Circuit
Reconductoring of Existing 230kV Transmission Line
Expansion of Existing Switching Station
New Switching Station
Additional Projects
Community Development
Transmission Line and Substation
ATP - Antelope Transmission Project
TRTP - Tehachapi Renewable Transmission Project
Transportation or Public Facility
Solar Generation
Wind Generation
Mixed Solar and Wind Generation
North Sky River Wind Project
Ridge Rider Solar Park
Pine Canyon Wind Project
Pine Tree Wind Project & Pine Tree Solar Project
EXPANSION OF BARREN RIDGE SWITCHING STATION
Beacon Solar Energy Project
RE Solar Project: Barren Ridge
Alta East Wind Project
Sand Canyon Wind Project
Clearvista Wind Project
Windstar Wind Project
Alta Wind Energy Project
Pahnamid Wind Project
Morgan Hills Wind Project
Catalina Renewable Energy Project
Tehachapi
Highwind Substation
Windhub Substation
California City
Mojave
Rising Tree Wind Project
Monte Vista Solar Array
RE Distributed Solar: Columbia 1, 2 &3, Rio Grande
Lower West Wind Project
Avalon Wind Project
RE Distributed Solar: Rosamond 1 & 2
Edwards Air Force Base
TEHACHAPI MOUNTAINS
PdV Wind Project
Cottonwind Substation
Pacific Wind Energy Project
Whirlwind Substation
TRTP: Seg. 10
Rosamond Solar Array
Willow Springs Solar Array
Antelope Valley Water Bank Project
Rosamond Solar Project
Kern County
Los Angeles County
Centennial, California
TRTP: Seg. 4
ATP: Seg. 3
California High Speed Rail
Antelope Valley Solar
AV Solar Ranch One
1
Antelope Substation
Lancaster
Angeles National Forest
2
2a
Elizabeth Lake
TRTP: Seg. 5
ATP: Seg. 2
ATP: Seg. 1
Green Valley
Pacific Pipeline Storm Relocation
CASTAIC POWER PLANT
Palmdale
3
PROPOSED HASKELL CANYON SWITCHING STATION
Vincent Substation
Pardee Substation
Santa Clarita
Soledad Canyon Cemex Project
TRTP: Seg. 11
Angeles National Forest
Los Angeles County
Ventura County
TRTP: Seg. 6
N
Los Angeles
RINALDI SUBSTATION
58
14
138
5
126
118
210
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS
LA DWP

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Energy Infrastructure Projects

Transmission Projects

Antelope Transmission Project – Construction of Southern California Edison's (SCE) proposed Antelope Transmission Project is underway and is proceeding in three sequential segments. Construction of Segments 1, 2 and 3A have been completed. Construction of Segment 3B, from Windhub Substation to and including Highwind Substation, has not started and no schedule has been developed by SCE (California Public Utilities – Current Projects).

Segment 1, Antelope – Pardee 500 kV Transmission Line, involved the construction of a new 25.6-mile transmission line between SCE's existing Antelope Substation in the city of Lancaster and SCE's existing Pardee Substation in Santa Clarita, with modifications to and/or expansion of the substations. The line was constructed in an existing SCE 66 kV transmission line right-of-way (ROW) for 23 miles, and within a new ROW for 18 miles. The line is initially energized to 220 kV to serve existing energy demand and can be upgraded to 500 kV to accommodate future needs.

Segment 2, Antelope – Vincent 500 kV Transmission Line, consists of a new 17.8 mile transmission line between the Antelope Substation and SCE's existing Vincent Substation near Acton. Similar to Segment 1, the line would initially be energized at 220 kV and upgraded to meet future needs.

Segment 3, Antelope – Tehachapi Transmission Line, consists of two phases. The first phase, 3A, would involve the construction of a new 26.1-mile 500 kV transmission line between the Antelope Substation and a proposed new substation in the vicinity of the unincorporated community of Mojave (Substation 1). Similar to Segments 1 and 2, this line would be initially energized at 220 kV and upgraded to meet future needs. The second phase, 3B, would involve the construction of a new 9.4-mile 220 kV transmission line from the proposed Substation 1 to a proposed new substation in the Monolith area (Substation 2).

Tehachapi Renewable Transmission Project (TRTP) – SCE is proposing to construct the TRTP, which would involve new and upgraded transmission infrastructure along 173 miles of new and existing rights-of-way, in southern Kern County, portions of Los Angeles County including the ANF, and the southwestern portion of San Bernardino County. Stated objectives for the project include providing the electrical facilities necessary to integrate levels of wind generation in excess of 700 MW and up to 4,500 MW in the Tehachapi Wind Resource Area (California Public Utilities – Current Projects).

The environmental review process for the project is currently underway. Construction began in April 2010 on approved sections. Project construction is estimated to be completed in 2015.

The project is composed of Segments 4 through 11, with Segments 4 through 8 and Segments 10 and 11 being transmission facilities, and Segment 9 being the addition and upgrade of substation facilities. Proposed transmission lines would be constructed primarily within existing rights-of-way. Major project components include:

- Constructing two new single-circuit 220 kV transmission lines within 4 miles of new ROW between the Cottonwood Substation and proposed Whirlwind Substation (Segment 4);
- Constructing a new single-circuit 500 kV transmission line within 16 miles of new ROW between the Antelope Substation and proposed Whirlwind Substation (Segment 4);
- Rebuilding 18 miles of the existing Antelope – Vincent and Antelope – Mesa 220 kV transmission lines to 500 kV standards within existing ROW between the Antelope and Vincent Substations (Segment 5);
- Rebuilding 27 miles of the existing Antelope – Mesa 220 kV transmission line and 5 miles of the existing Rio Hondo – Vincent 220 kV transmission line to 500 kV standards between the Vincent Substation and the southern boundary of the ANF (Segment 6);

- Rebuilding 16 miles of the existing Antelope – Mesa 220 kV transmission line to 500 kV standards between the southern boundary of the ANF and Mesa Substation (Segment 7);
- Rebuilding 33 miles of the existing Chino – Mesa 200 kV transmission line to 500 kV standards between a point 2 miles east of the Mesa Substation and the Mira Loma Substation (Segment 8);
- Rebuilding 7 miles of the existing Chino – Mira Loma No. 1 220 kV transmission line from single-circuit to double-circuit structures (Segment 8);
- Constructing a new 500/220 kV Whirlwind Substation 4 to 5 miles south of the Cottonwood Substation (Segment 9);
- Upgrading the existing Antelope, Vincent, Mesa, Gould, and Mira Loma Substations to accommodate new transmission line construction and system compensation elements (Segment 9);
- Constructing a new single-circuit 500 kV transmission line within 17 miles of new ROW between the Windhub Substation and proposed Whirlwind Substation (Segment 10);
- Rebuilding 19 miles of existing 220 kV transmission line to 500 kV standards in existing ROW between the Vincent and Gould Substations (Segment 11);
- Adding a new 220 kV circuit between the Mesa and Gould Substations on the vacant side of the existing Eagle Rock – Mesa 220 kV transmission line double circuit structures (Segment 11); and
- Installing associated telecommunications infrastructure.

Generation Projects

Numerous wind and solar generation projects are in various stages of planning and development within the Project vicinity. Projects considered include the projects currently undergoing environmental review or projects that have been recently approved. Table 53 below summarizes the major known projects and their current status as of April 2011 (County of Kern Environmental Documents and AV Solar Ranch One).

TABLE 53. PROPOSED GENERATION PROJECTS IN THE PROJECT VICINITY

Project Name	Project Type	Approximate Generation	Area (acres)	Location	Status
Alta East Wind Project	Wind	300 MW	3,660	Kern County	Application to Kern County deemed complete on Aug. 2010
Alta Wind Energy Center: Alta-Oak Creek Mojave Project	Wind Turbine	800 MW	9,175	Kern County	Approved by Kern County Dec. 2009
Antelope Valley Solar Project	Solar Photovoltaic	650 MW	5,698	Kern County	Draft EIR released April 2011
AV Solar Ranch One	Solar Photovoltaic	230 MW	21,000	Los Angeles County	Final EIR completed Aug. 2010
Avalon Wind Project	Wind	255 MW	10,000	Kern County	Application to Kern County deemed complete on July 2010
Beacon Solar Energy Project	Concentrated Solar	250 MW	2,012	Kern County	Application for Certification approved Aug. 2010
Catalina Renewable Energy Project	Wind Turbine & Solar Photovoltaic	350 MW	7,472	Kern County	Notice of Preparation for a Draft EIR filed Feb. 2011
Clearvista Wind Project	Wind Turbine	40 MW	226	Kern County	Draft EIR released Nov. 2010
Edwards Air Force Base Solar Project	Solar	500 MW	3,288	Kern County	Lease execution anticipated 2012

Project Name	Project Type	Approximate Generation	Area (acres)	Location	Status
Lower West Wind Energy Project	Wind Turbine	14 MW	185	Kern County	Draft EIR released April 2011
Monte Vista Solar Array	Solar Photovoltaic	126 MW	1,040	Kern County	Notice of Preparation for a Draft EIR filed March 2010
Morgan Hills Wind Project	Wind	230 MW	3,604	Kern County	Application submitted Nov. 2010
North Sky River Wind Project	Wind Turbine	326 MW	1,330	Kern County	Notice of Preparation for a Draft EIR filed Nov. 2010
Pacific Wind Energy Project	Wind Turbine	151 MW	8,300	Kern County	Approved by Kern County Oct. 2010
Pahnamid Wind Energy Project	Wind Turbine	411 MW	7,106	Kern County	Notice of Preparation for a Draft EIR filed April 2011
PdV Wind Energy Project	Wind Turbine	300 MW	5,820	Kern County	Approved by Kern County July 2008
Pine Canyon Wind Project	Wind Turbine	150 MW	12,000	Kern County	Preliminary planning
Pine Tree Solar Project	Solar Photovoltaic	10 MW	75	Kern County	Preliminary planning
Pine Tree Wind & Expansion	Wind Turbine	135 MW	n/a	Kern County	Preliminary planning
RE Distributed Solar Project	Solar Photovoltaic	221 MW	1,709	Kern County	Notice of Preparation for a Draft EIR filed Jan. 2011
Ridge Rider Solar Park Project	Solar Photovoltaic	38 MW	475	Kern County	Notice of Preparation of a Draft EIR filed March 2010
Rising Tree Wind Farm	Wind Turbine	234 MW	2,745	Kern County	Notice of Intent to prepare a EIS/EIR filed Jan. 2011
Rosamond Solar Array	Solar Photovoltaic	155 MW	1,177	Kern County	Notice of Preparation of a Draft EIR filed March 2010
Rosamond Solar Project	Solar Photovoltaic	120 MW	960	Kern County	Approved by Kern County Nov. 2010
Sand Canyon Wind Projects	Wind Turbine	40 MW	300	Kern County	Notice of Preparation of a Draft EIR filed Oct. 2010
Willow Springs Solar Array Project	Solar Photovoltaic	160 MW	1,402	Kern County	Notice of Preparation of a Draft EIR filed March 2010
Windstar Wind Energy Project	Wind Turbine	65 MW	1,007	Kern County	Approved by Kern County April 2009

There are also plans in various stages of development to establish additional wind and solar energy projects on BLM land in the Project vicinity. The submission of an application to BLM is a preliminary step in the project planning process, but not all applications ultimately result in successful project development. Below is a list of current applications for wind and solar energy generation projects in the Project vicinity submitted to BLM's Ridgecrest Field Office as of February 2010 (U.S. Department of the Interior, Bureau of Land Management – Renewable Energy).

TABLE 54. BLM RIDGECREST OFFICE APPLICATIONS FOR WIND AND SOLAR ENERGY GENERATION PROJECTS IN THE PROJECT VICINITY.

Serial Number	Applicant	Date Application Received, ROW Grant Issued, Last Amended Date	Approximate Area (Acres)	Project Type	Location
CACA 46978	Sean Roberts, Renewable Land LLC	7/1/04	528	Pending Wind	Mojave
CACA 47848	Oak Creek Energy	1/11/06	7,349	Pending Wind	Lucchese
CACA 48536	Oak Creek Energy	7/25/06	1,800	Pending Wind	Soledad Mountain Wind Project

Serial Number	Applicant	Date Application Received, ROW Grant Issued, Last Amended Date	Approximate Area (Acres)	Project Type	Location
CACA 48820	First Solar (Formally OptiSolar Inc.)	12/13/08	5,760	Pending Solar	Mojave Area
CACA 49577	Power Partners SW (enXco)	8/10/07	1,816	Pending Wind	Soledad area
CACA 50171	AES SEAWEST INC	7/3/09	120	Pending Wind	Kern County
CACA 50768	Riverside Wind Energy LLC	4/20/09	480	Pending Wind	Gorman
CACA 51016	Advanced Dev Services, Inc	4/30/09	11,174	Pending Wind	Kern County
CACA 51335	Alta Windpower Dev., LLC	7/13/09	584	Pending Wind	Kern County
CACA 51561	Power Partners Southwest	12/11/09	1,160	Pending Wind	Kern County

Other Major Projects

Transportation and Public Facilities

California High Speed Rail – This project proposes a ±700-mile high speed rail line from Sacramento to San Diego. The Statewide Programmatic EIS/EIR was completed in 2005, and the Bay Area to Central Valley High-Speed Train Program EIS/EIR was completed in 2008. Multiple second-tier project-level environmental documents (with preliminary engineering design) are currently underway (California High Speed Rail Authority).

Pacific Pipeline Storm Relocation Project and Access Road Repairs – Pacific Pipeline is proposing to relocate several miles of crude oil pipeline to more stable ground within the ANF. Project implementation was expected in November 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Antelope Valley Water Bank Project – This project proposes to develop facilities to store and recharge imported surface water and associated delivery and distribution pipelines. The 13,440-acre facility area would be bounded by the Kern/Los Angeles County border line (also known as Avenue A) to the south and Rosamond Boulevard to the north, and between 170th Street West and 100th Street West in unincorporated Kern County (U.S. Department of the Interior, Bureau of Reclamation – Mid-Pacific Region).

Soledad Canyon Cemex Project – The Soledad Canyon Cemex project would be a 56-million-ton sand and gravel mining project in the Soledad Canyon area. The BLM approved the project with mitigating measures in 2000, and the Interior Board of Land Appeals affirmed that decision in 2002. A City of Santa Clarita challenge to the US Supreme Court was denied in 2006. This project is pending development with ongoing challenges and delays (Cemex United States).

Community Development

Centennial, California – The proposed project site consists of 12,000 acres located one mile east of Interstate 5 (I-5) and adjacent to State Highway 138 in Los Angeles County. The project would include a specific plan and subdivision entitlements (i.e., tract maps and conditional use permits) for a master planned community. The specific plan proposes a maximum of 23,000 dwelling units and 14 million total square feet of non-residential development of employment areas (12,233,390 square feet) and retail serving centers (1,986,336 square feet), anticipated to be built over approximately 20 years, with build-out expected in 2030. If the project is approved by Los Angeles County, it is estimated that the non-residential development may generate approximately 31,000 jobs. The draft Specific Plan for the unincorporated community of Centennial was submitted to Los Angeles County in February 2003 and is currently being reviewed by the county (Centennial, California).

Maintenance and Landscape Management Projects

Black Oak Mistletoe Project – The Forest Service is proposing to restore stands of black oaks along Forest Road 7N23 by managing the mistletoe infestation in the area. Several eradication techniques will be used. Understory planting will also occur to help promote native restoration (USFS 2011).

Bouquet Canyon Road Realignment – Los Angeles County Department of Public Works is proposing to straighten some sections of Bouquet Canyon Road and to raise the road surface by approximately nine feet. A Memorandum of Understanding between ANF and Los Angeles County is currently under development to initiate the project (USFS 2011).

Buffer OHV Restoration Project – The Forest Service is proposing to restore areas in the vicinity of Texas Canyon and Rowher Canyon that have been previously damaged by unauthorized OHV use. Botanical, wildlife, and archaeological surveys in the area have not been completed (USFS 2011).

Elizabeth Tunnel Repair Project – In fall of 2009, LADWP repaired the entrance to the Elizabeth Tunnel in South Portal Canyon. This consisted of digging up sediment that had slid off the entrance to the tunnel, which is normally concealed by a dirt wall, and replacing it at the tunnel's entrance.

Jupiter Fuelbreak Project – USFS proposes to re-establish an existing fuel break that begins southwest of the unincorporated community of Green Valley and travels east, bisecting Jupiter Mountain, before heading south to Bouquet Reservoir.

Lake Hughes Plantation Restoration Project – The proposed project would restore unauthorized off-highway vehicle trails at the Christian and Taylor Plantations located within the ANF in order to reduce soil erosion, the spread of weeds, destruction of native plants, soil compaction, and wildlife habitat loss. Proposed actions include recontouring and decompacting soils, reseeding with native species, and reinforcing check dams. The project was approved by the District Ranger in 2009 and scheduled for implementation in January 2010 (USFS 2011).

Livestock Grazing Allotments – BLM currently authorizes both cattle and sheep grazing on 11 grazing allotments in and around the project area. The livestock are authorized with 10 year permits/leases and yearly authorizations. These allotments encompass over one half million acres of BLM-managed lands. The number of livestock grazed each year depends upon weather conditions.

Old Ridge Route Storm Damage Repair – USFS is proposing to repair and provide maintenance to seven storm-damaged locations along the Old Ridge Route in ANF. A decision on the project is expected in late 2010 (USFS 2011).

Pelona OHV Restoration Project – The Forest Service is proposing to restore areas in the vicinity of Bouquet Canyon that have been previously damaged by unauthorized OHV use. Botanical, wildlife, and archaeological surveys in the area have not been completed (USFS 2011).

Portal Ridge Restoration Project – The Forest Service is proposing to place barriers along Portal Ridge to restrict unauthorized vehicle access. In addition, compacted soil would become scarified to promote plant growth and signs would be installed to dissuade the public from trespassing (USFS 2011).

Power Plant 2 Tailings Removal Project – In spring and summer 2009, LADWP removed tailings material—left from the aqueduct construction—from the hillside above Power Plant 2 (PP2). The material was lifted off the hillside and deposited in two fill sites located on the ridge in areas that were not at risk of eroding. Slender mariposa lily was present on-site and removed for the duration of construction.

San Francisquito/Bouquet Creek Weed Removal Project – In 2010, the Forest Service removed invasive weeds along approximately 2.5 miles of stream in the San Francisquito and Bouquet Creek watersheds. This habitat was suitable for the Forest Service Sensitive species arroyo chub (USFS 2010a).

San Francisquito Road Rehabilitation and Sediment Disposal Site – Los Angeles County Department of Public Works is proposing a road realignment and new bridge along San Francisquito Road within the ANF and to use eight acres of Forest land as a spoils site in support of construction activities. Public Scoping began in June 2007, and a decision was expected in September 2010 (USFS 2011).

Santa Clara/Mojave River Rangers District Plantation Maintenance Project – The proposed project would consist of vegetation maintenance at 13 plantations located within the ANF in order to reduce wildfire risk, and improve wildlife habitat and the vitality of individual remaining trees. Proposed actions include removal of dead trees, thinning of live trees, pruning, removing weeds, and planting for reforestation where necessary. This action was approved by the District Ranger in January 2010 (USFS 2011).

Santa Clara River Watershed Invasive Plant Treatment Project – The Forest Service is proposing to eradicate, control, contain, and/or suppress existing and new infestations of invasive plant species in the Santa Clara/Mojave River Watershed by the use of herbicides, manual, mechanical, biological, and fire methods (USFS 2011).

Tule Ridge/South Portal Fuels Reduction Project – USFS proposes fuels reduction and re-establishment of a fuel break to provide protection to unincorporated community of Green Valley. The project would also enhance wildlife for mammals and birds (USFS 2011).

Local Projects

Los Angeles County

The projects below are those in Los Angeles County that occur within five miles of the BRRTP and that were determined to have potential biological impacts. Because not every project has a formal name, they are listed below by their case numbers. Available documentation for each project below can be obtained from the LA County Department of Regional Planning website by using the case number (LA County Department of Regional Planning 2011).

Case 00-210 – The proposed project involves the construction of a new housing development south of Six Flags Magic Mountain called Entrada. The project would involve construction of 1,640 housing units, commercial development, a new school, a public park, public facilities and two private recreation centers, and open space areas. It would also involve improvements to local infrastructure. The total project area is 515 acres. The site contains an unnamed channel and several sensitive habitat types; 65 oak trees would be removed and 12 oaks would be encroached upon. There are also records of 25 special-status species being on-site or in the project vicinity, including the federal Endangered San Fernando Valley spineflower and the federal Candidate western yellow-billed cuckoo. The final determination of the Initial Study called for an Environmental Impact Report.

Case 01-154 – The proposed project involves the construction of a new mining operation and processing area on 25 acres of a 73-acre site. The processing area will require the construction of numerous permanent facilities, including a scale house, an office trailer, electrical generators, two water tanks, two above-ground fuel tanks, a crusher plant, and a screening plant. A detention pond, access road, and truck loading area are also proposed. The site includes chaparral, coastal sage scrub, and riparian habitat, including the Pacoima wash and its tributaries. There are also known oak trees and potentially suitable habitat for slender-horned spineflower and coastal California gnatcatcher. The final determination of the Initial Study called for an Environmental Impact Report.

Case 04-023 – The proposed project involves the improvement of an existing health retreat facility in Bouquet Canyon. Proposed improvements involve construction of three four-foot wide concrete walkways, an Arizona crossing, a secondary emergency access road with a bridge, a four-inch sewer line, widening the fire lane to 20 feet, demolishing portions of existing buildings, and conducting several aesthetic improvements. This project is expected to involve vegetation clearance and may involve impacts to Bouquet Creek, willow riparian scrub, oak trees, and the coast horned lizard (*Phrynosoma coronatum*). The final determination of the Initial Study called for a Mitigated Negative Declaration.

Case 04-089 – The proposed project involves alterations to an existing ranch and movie filming site. Proposed alterations include relocation of an existing residence out of the flood plain of Placerita Creek, relocation of the site's main entrance and driveway, and construction of a new detached restroom facility. Two blue-line streams, Placerita Creek and Heil Creek, are located on-site. The project would involve the removal of 14 oak trees and encroachment of five oak trees. A Mitigated Negative Declaration was drafted for this project.

Case R2007-01655 – The proposed project involves the construction of a new home on a 40-acre site. Construction includes a single-family residence, a second unit, multiple garages, an office/gym, a pool house, a gate house, and a workshop. The site contains a blue-line stream, southern willow scrub, coastal sage scrub, coast live oak woodland, chaparral, and western sycamore habitat, and lies within designated critical habitat of the coastal California gnatcatcher. There are nine special-status plants and thirteen special-status wildlife which would occur on the property. A total of 51 oak trees are proposed to be removed and an additional 109 to be encroached upon. The final determination of the Initial Study called for a Mitigated Negative Declaration.

Case TR066202 – The proposed project involves the construction of 31 new detached single-family condominiums on a 7.61-acre area. This project may affect nesting habitat for native bird species in the area, and the coastal California gnatcatcher is unlikely to occur on-site. The final determination of the Initial Study called for a Mitigated Negative Declaration.

Kern County

The projects below are those in Kern County that occur within five miles of the BRRTP—with one exception—and that were determined to have potential biological impacts (Kern County 2009). Because these projects did not have names or case numbers, they have been placed into groups of similar projects and are described according to project type below. Specific project inquiries can be directed to the Kern County Planning and Community Development Department.

Generation and Communications – There are three proposed generation and communications projects in Kern County in the BRRTP vicinity. One of these is greater than five miles from the BRRTP centerline, but is included here because it involves the construction of ten 20 MW solar voltaic panels on an 820-acre area. This project is located approximately seven miles west of Alternative 2. Another project located between Willow Springs and Rosamond proposes the construction of two 45-foot wind turbines. A proposed cellular communications tower is located 4.75 miles west of the Project area. Its disturbance footprint is unknown, but it may involve the placement of several equipment cabinets and other associated equipment along with the communications tower.

Mining and Excavation – There are four mining and excavation projects in the vicinity of the BRRTP in Kern County. These are existing operations which were recently submitted for renewal and/or modification. These operations are likely high traffic areas. The CNDDB has a 2006 record of a live tortoise being encountered within one mile of one of these sites (CDFG 2011).

Residential Development – There are three proposed apartment communities in the BRRTP vicinity in Kern County, all located on the outskirts of Mojave. One community, located on the northwestern side of Mojave, is a proposed 81-unit complex; the remaining two are adjacent to each other on the south end of town and are proposals for an 81-unit complex and a 50-unit complex. The CNDDB has a record of a dead desert tortoise located just over two miles south of the latter two communities (CDFG 2011). All three communities are on undeveloped land, though they have development nearby.

Other Development – There are four projects in the BRRTP vicinity that consist of development that is not for housing. Two of these are churches, one located in Mojave in an area south of the airport and the other between Willow Springs and Rosamond. One project involves the addition of several storage tanks to an existing facility in Mojave; this project is 1.1 miles from a 2006 CNDDB record of a dead desert tortoise (CDFG 2011). The last involves the addition of a 3,000-square foot assembly hall at an existing cemetery approximately four miles southwest of Willow Springs.

9.1.3 Direct and Indirect Impacts Summary

Both direct and indirect impacts are expected to occur to vegetation and wildlife. Direct impacts are defined as those which occur at the same time and place as BRRTP or the surrounding projects mentioned in Section 5.2. Indirect impacts are defined as those which are caused by BRRTP or surrounding projects, but which occur at a later time or occur at a distance farther removed from the direct construction corridor. While all of the direct and indirect impacts below could possibly occur due to BRRTP, not all may necessarily apply to each project listed in Section 5.2. However, any common direct or indirect impacts between BRRTP and any of the above-listed projects will exert cumulative effects of varying degrees on certain species or groups of species.

Direct Impacts

- Habitat loss, fragmentation, or degradation (short-term and long-term);
- Direct injury or mortality;
- Disturbance of special-status plants or animals (dust deposition on or crushing of plants, disturbance of an animal's daily activities or natural history); and
- Dispersal of local wildlife (including mortality of young for nesting wildlife);

Indirect Impacts

- Habitat degradation (spread of non-native plant species, soil compaction);
- Indirect injury or mortality (dispersal leading to increased predation risk and/or competition, ingestion of construction debris);
- Disturbance of special-status plants (loss of plant vigor due to dust or mud deposition);
- Reduction in water quality due to insufficient erosion control; and
- Avian collisions and/or electrocutions.

9.1.4 Cumulative Effects Evaluation

Cumulative effects are evaluated below for each receptor or group of receptors that may be affected by BRRTP and surrounding projects. Because of the common susceptibility that plants have to potential project impacts, they are grouped together into one category. Wildlife are broken into three categories which consist of terrestrial (including burrowing), aquatic, and aerial species. Plants and animals which are listed as Endangered, Threatened, or Candidate species according to State or Federal regulations are individually separated into their appropriate categories above. Plants and animals which are sensitive according to BLM, CNPS, CDFG, or USFS are grouped into the general plants, terrestrial animals, aquatic animals, and aerial animals categories.

Plants

Slender Mariposa Lily (*Calochortus clavatus var. gracilis*) – The USFS sensitive slender mariposa lily has been identified on BRRTP's Segments D, G, and I. Cumulative effects may be projected onto this species with the combined influence of BRRTP with the Pacific Pipeline Storm Relocation Project on Segment D and LADWP's Power Plant Two (PP2) Tailings Removal Project, the Santa Clara/Mojave Rivers Ranger District Plantation Maintenance Project, SCE's Antelope-Pardee 500 kV Transmission Line Project, and SCE's Tehachapi Renewable Transmission Project (TRTP) on Segments G and I. In addition, there are several maintenance projects in the Project's vicinity in the ANF that may contribute to cumulative effects on this species. The Pacific Pipeline Storm Relocation Project, located east of Segment D, will relocate several miles of crude oil lines to different locations and will likely result in some habitat loss to this species, although the specific amount is unknown (USFS 2011). It is unknown if this will impact the approximately one dozen individuals that were identified on Segment D during BRRTP botanical surveys (POWER 2010c), but would still result in a loss of habitat. LADWP's PP2 Tailings Removal Project, located west of Segment G, resulted in the removal of approximately 150 individual slender mariposa lilies from its project area. However, while approximately 2,400 individuals and nearly 1,700 individuals—with some overlap—were located on Segment G during BRRTP botanical surveys in 2008 and 2009, respectively (POWER 2008b, POWER 2010c), none of these was part of the individuals removed during the PP2 Tailings Removal Project. Approximately 5,000 slender mariposa lilies, as well as several acres of suitable habitat were impacted by SCE's Antelope-Pardee Project, located east of Segment G and north of Segment I. Over 400 individuals were located on Segment I during BRRTP botanical surveys, and will be impacted by habitat loss and degradation if not also individual removal, depending on specific plant locations (POWER 2008b). Two of the plantations in the Santa Clara/Mojave Rivers Ranger District Plantation Maintenance Project—Hollow Tree and Artesian Springs—that recently underwent vegetation and habitat management had over 100 impacted slender mariposa lilies located at each (K. VinZant personal communication 2011). The effects from these four projects will exert a cumulative effect with BRRTP on slender mariposa lily by reducing the overall local population and also removing and degrading appropriate habitat. SCE's TRTP, located east and southeast of BRRTP, estimated that it was unlikely for slender mariposa lily to be present within TRTP Segments 4 and 5, but that individuals could possibly be present on Segments 6 and 11 due to nearby populations (Aspen 2009). Both of the latter TRTP segments are located within the ANF south of California SR 14. Loss of individuals or of habitat in these areas would exert a cumulative effect with BRRTP on slender mariposa lily by reducing the overall regional population and/or habitat. The Jupiter Fuelbreak Project and Tule Ridge/South Portal Fuels Reduction Project may result in loss of habitat for this species in the areas where vegetation is cleared. Some projects, like the Black Oak Mistletoe Project, Buffer OHV Restoration Project, Pelona OHV Restoration Project, Portal Ridge Restoration Project, and South Portal Restoration Project may benefit the slender mariposa lily by directly improving habitat conditions or by indirectly improving habitat conditions by restricting human access.

There are currently 54 recorded occurrences of this species within the California Natural Diversity Database (CNDDB), including 51 in Los Angeles County and three in Ventura County, and 42 records in the Jepson Online Interchange, all from Los Angeles County. All CNDDB records are presumed extant, and 36 of these are from within the last decade. The largest of these is a cumulative 31,370 individual plants from numerous survey areas on Newhall Ranch in 2003; however, most other records in CNDDB are smaller than those seen during 2008 BRRTP surveys, although the total numbers observed in BRRTP surveys in 2008 and 2009 are composed of several dozen individually mapped populations. As such, the total number of slender mariposa lilies located within the Alternative 2 corridor represents a large amount of individuals from this species relative to many of the other documented occurrences. However, because the large number of slender mariposa lilies in the BRRTP Alternative 2 corridor is composed of many smaller populations ranging from one to 1,000 individuals, the impact that BRRTP construction would have on the species as a whole is dependent on which specific populations would be impacted within the Project Area.

Several other projects are located in the vicinity of the BRRTP, including the construction of the community of Centennial, CA partially within Segment D north of ANF by Centennial Founders, LLC; LADWP's sediment removal within Castaic Creek east of Segment D; LADWP's repair of the Elizabeth Tunnel located west of Segment G and Segment 2a; and the USFS weed removal within Bouquet Creek, located east of Segment G and north of Segment I. The Centennial, CA construction is unlikely to have any impact on slender mariposa lily because slender mariposa lily is not known to grow on the northern slopes of the San Gabriel and Sierra Pelona Mountains and is unlikely to occur within this project area (Aspen 2009, USDA 2010a). The sediment removal within Castaic Creek which occurred in fall 2009 had no effect on slender mariposa lily because the habitat that was removed was unsuitable for this species. While the Elizabeth Tunnel repair project conducted in fall 2009 was in an area surrounded by chaparral vegetation, the specific project work resulted in little, if any, impact to the chaparral on the slopes. The weed removal within San Francisquito and Bouquet Creeks by USFS staff had no effect on slender mariposa lily because there was no suitable habitat for it within the project area.

While no botanical surveys were conducted on Segment K, there may be existing habitat for or individuals of this species on this segment. General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-24, GP-25, GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat).Cumulative effects on slender mariposa lily between BRRTP and past, present, and foreseeable projects would be significant.

Short-joint Beavertail (*Opuntia basilaris var. brachyclada*) – The USFS and BLM sensitive short-joint beavertail has been identified on BRRTP's Segments D, G, and I. Cumulative effects may be projected onto known populations of this species with the combined influence of BRRTP with the construction of the Centennial, CA community and the Pacific Pipeline Storm Relocation Project on Segment D and LADWP's Power Plant Two (PP2) Tailings Removal Project, SCE's Antelope-Pardee 500 kV Transmission Line Project, and SCE's Tehachapi Renewable Transmission Project (TRTP) on Segments G and I. Centennial Founders' construction of the unincorporated community of Centennial, CA will likely remove short-joint beavertail habitat, although it is unknown if there are any individual plants within its project area. It is located around SR 138 near the corner of Segment D where the ANF gives way to the Antelope Valley. The Pacific Pipeline Storm Relocation Project, located east of Segment D, will relocate several miles of crude oil lines to different locations and will likely result in some habitat loss to this species, although the specific amount is unknown (USFS 2011). It is unknown if this will impact the 40 individuals that were identified on Segment D during BRRTP botanical surveys (POWER 2010c), but would still result in a loss of habitat. LADWP's PP2 Tailings Removal Project, located west of Segment G, did not have any identified individuals of this species, although suitable habitat was removed during the project. During 2008 and 2009 BRRTP botanical surveys, 84 short-joint beavertail individuals were identified along Segment G (POWER 2008b, POWER 2010c) which will likely be affected by BRRTP construction, resulting in a combined effect of habitat loss in both areas. No short-joint beavertails were located during botanical surveys for SCE's Antelope-Pardee Project, located east of Segment G and north of Segment I (LSA 2007f, LSA 2007g, LSA 2007h), but appropriate habitat for this species was impacted during construction. Five individuals were located on Segment I during BRRTP botanical surveys, and will be impacted by habitat loss and degradation if not also individual removal, depending on specific plant locations (POWER 2008b). SCE's TRTP, located east and southeast of BRRTP, estimated that it was likely for short-joint beavertail to be present within TRTP Segment 5, and that individuals are present on Segments 6 and 11 (Aspen 2009). TRTP Segment 5 originates in the southern section of ANF and runs adjacent to BRRTP Segment I; TRTP Segments 6 and 11 are located within the southern section of ANF. Loss of individuals or of habitat in any of these areas would exert a cumulative effect with BRRTP on short-joint beavertail by reducing the overall local and regional population and/or habitat. The Jupiter Fuelbreak Project and Tule Ridge/South Portal Fuels Reduction Project may result in loss of habitat for this species in the areas where vegetation is cleared. Some projects, like the Black Oak Mistletoe Project, Buffer OHV Restoration Project, Pelona OHV Restoration Project, Portal Ridge Restoration Project, and South Portal Restoration Project, may benefit the short-joint beavertail by directly improving habitat conditions or by indirectly improving habitat conditions by restricting human access.

Several projects are located in the Antelope Valley and Mojave Desert near Segments A, B, C, and E. While no specimens are known from these areas, these project areas may be within habitat which is suitable for short-joint beavertail to grow. These projects include the Beacon Solar Energy Project, Pine Canyon Wind Project, Pine Tree Solar Project, Windstar Wind Energy Project, Alta Wind Energy Center: Alta-Oak Creek Mojave Project, PdV Wind Energy Project, Antelope Valley Water Bank Project, AV Solar Ranch One, and numerous parcels of land for which BLM has applied for applications to build wind or solar generation facilities. For projects which have available biological resource documents, these projects are not known to have short-joint beavertail present on them, but they may contain suitable habitat for it, and construction would affect that habitat by removing or degrading it for project sites. The California High Speed Rail runs along the edge of the southern section of ANF and along SR 14 between the northern and southern ANF sections; while there may be short-joint beavertail individuals and/or habitat located in this area along the edge of ANF, full biological studies of the rail line have not been conducted yet.

Some additional projects are located in the vicinity of the BRRTP, including LADWP's sediment removal within Castaic Creek east of Segment D; LADWP's repair of the Elizabeth Tunnel located west of Segment G and Segment 2a; and the USFS weed removal within Bouquet Creek, located east of Segment G and north of Segment I. The sediment removal within Castaic Creek which occurred in fall 2009 had no effect on short-joint beavertail because the habitat that was removed was not appropriate for this species to grow in. While the Elizabeth Tunnel repair project conducted in fall 2009 was in an area surrounded by chaparral vegetation, the specific project work resulted in little, if any, impact to the chaparral on the slopes. The weed removal within San Francisquito and Bouquet Creeks by USFS staff had no effect on short-joint beavertail because there was no suitable habitat for it within the project area.

While no botanical surveys were conducted on Segment K, there may be existing habitat for or individuals of this species on this segment. General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-24, GP-25, GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat). Cumulative effects on short-joint beavertail between BRRTP and past, present, and foreseeable projects will not be significant if properly mitigated.

Non-listed Special-status Plant Species – There are many special-status plant species which may occur in the BRRTP area, only two of which were identified during 2008, 2009, and 2010 botanical surveys. These include species listed as "sensitive" by the State and the California Native Plant Society. Specific sensitive plant species and species of special concern are described in greater detail in Section 4.3.1 and Table 8. Large populations or many scattered individuals of sensitive plant species may have gone undetected in the limited surveys that were conducted. Direct impacts which may occur to these species include habitat loss and degradation due to construction activities and disturbance due to dust deposition or crushing (but not removal) of vegetation. Dust deposition may lead to reduced plant vigor if the plants are unable to sufficiently photosynthesize. Indirect impacts to this species include soil compaction from excessive activity and spread of non-native weed species as a result of seeds stuck to vehicles. Soil compaction may prevent sufficient water from reaching the roots of plants, which can lead to mortality or a reduction in vigor of the plant. Non-native weed species tend to follow disturbance and can spread through vehicle tires or be carried by the wind from nearby established populations. With the amount of disturbance that may occur with this Project where new roads or tower sites are created, there could be a potentially large amount of non-native weed seeds spreading into bare or disturbed areas. Surrounding projects, whether large or small, result in some quantity of habitat loss and/or spread of non-native weeds, which in turn makes it difficult for native plants to establish and can affect whole habitats. There are several transmission line, wind, or solar energy projects within the BRRTP vicinity along the ANF, Antelope Valley, and Mojave Desert. These include the Alta East Wind Project, Avalon Wind Project, Catalina Renewable Energy Project, Beacon Solar Energy Project, Lower West Wind Project, Pacific Wind Energy Project, Pine Canyon Wind Project, Pine Tree Solar Project, Windstar Wind Energy Project, Alta Wind Energy Center: Alta-Oak Creek Mojave Project, PdV Wind Energy Project, Ridge Rider Solar Park Project, Rosamond Solar Array, Willow Springs Solar Array Project, Rising Tree Wind Project, Antelope Valley Water Bank Project, AV Solar Ranch One, RE Distributed Solar Project, Tehachapi Renewable Transmission Project, Antelope-Pardee 500 kV Transmission Project, various parcels of land for which the BLM has applied to develop for wind or solar generation, and several other projects listed above. Additional projects in the BRRTP area include the Antelope Valley Water Bank Project, the California High Speed Rail, the construction of the unincorporated community of Centennial, the Pacific Pipeline Storm Relocation, the ongoing Castaic Power Plant Sediment Removal, the PP2 Tailings Removal Project, the Elizabeth Tunnel repair, the Bouquet Creek Weed Removal Project, and the Grapevine Creek Streambed Diversion Project, along with various Forest maintenance projects and local projects within LA or Kern Counties. All of these projects have or will result in vegetation loss and, although efforts are made to identify special-status plant species for avoidance before construction begins, some individuals may have been or may be missed, resulting in individual losses. It is not expected that any of these individual projects will lead to a change in listing status of any of these plants, but considered cumulatively they may be more significantly affected in local or regional populations of species.

General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-24, GP-25, GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat). However, large populations or many scattered individuals of sensitive plant species may have gone undetected in the limited surveys that were conducted along all the Alternatives, especially in more dense or inaccessible chaparral. Therefore, cumulative effects on special-status plant species between BRRTP and past, present, and foreseeable projects may be significant.

Non-native Invasive Plant Species – Numerous species of non-native invasive plants were identified within the Project area during 2008, 2009, and 2010 botanical surveys (POWER 2009e). These plants can destroy wildlife habitat, threaten listed species and native plants, and increase soil erosion and ground water loss. The plants that were identified within the Project area during surveys were split into categories composed of high-risk noxious weed species, moderate-risk noxious weed species, and low-risk noxious weed species or species for which there is relatively little information. High-risk species have high impacts on physical processes, plant and animal communities, and vegetation structure of the environments in which they establish. They typically experience moderate to high rates of dispersal and establishment and most have wide ecological distribution ranges. Moderate-risk species have clear impacts on physical processes, plant and animal communities, and vegetation structure of the communities in which they establish, but not as severe as the high-risk species. They generally experience moderate to high dispersal rates, with their establishment success dependent on ecological disturbance. Ecological amplitude and distribution may range from restricted to extensive. Low-risk species have more minor impacts on a statewide level than either the high- or moderate-risk species. In some cases there is not enough information known about the species to justify an elevation into either of the other categories. They generally experience low to moderate dispersal rates, and although their ecological amplitude and distribution may be limited, these species may still be problematic on local levels.

There are several transmission line, wind, or solar energy projects within the BRRTP vicinity along the ANF, Antelope Valley, and Mojave Desert. These include the Alta East Wind Project, Avalon Wind Project, Catalina Renewable Energy Project, Beacon Solar Energy Project, Lower West Wind Project, Pacific Wind Energy Project, Pine Canyon Wind Project, Pine Tree Solar Project, Windstar Wind Energy Project, Alta Wind Energy Center: Alta-Oak Creek Mojave Project, PdV Wind Energy Project, Rising Tree Wind Project, Ridge Rider Solar Park Project, Rosamond Solar Array, Willow Springs Solar Array Project, Antelope Valley Water Bank Project, AV Solar Ranch One, RE Distributed Solar Project, TRTP, ATP, various parcels of land for which the BLM has applied to develop for wind or solar generation, and several other projects listed above. Additional projects in the BRRTP area include the Antelope Valley Water Bank Project, the California High Speed Rail, the construction of the unincorporated community of Centennial, the Pacific Pipeline Storm Relocation, the ongoing Castaic Power Plant Sediment Removal, the PP2 Tailings Removal Project, the Elizabeth Tunnel repair, the Bouquet Creek Weed Removal Project, and the Grapevine Creek Streambed Diversion Project. Numerous local projects in LA and Kern Counties, along with Forest maintenance projects (such as the Tule Ridge, Green Valley, and Leona Divide Fuelbreaks or the Hollow Tree and Artesian Springs Tree Plantation Fuel Removal projects), may also increase the spread of non-native invasive weeds. For any of these projects, disturbance related to construction or maintenance has the potential to increase infestations of noxious weed species, particularly if vegetation is cleared, because during regrowth the native species will be competing to re-establish at the same time that the noxious weed species are attempting to dominate the cleared area. Additionally, vehicles and personnel can carry weeds on-site with them and along access roads, increasing the likelihood of spreading noxious weed species into areas where they may not have been prevalent or increasing the size of existing local populations of noxious weeds. Some sites may contain existing noxious weed seed banks which will contribute to the spread of weed species as sites are disturbed. Some of these projects may be on existing weedy sites and construction will likely not contribute to a significant increase in weed abundance, but sites that are dominated by native plant species may be more susceptible to shifts in species composition and dominance. However, the USFS San Francisquito/Bouquet Creek Weed Removal Project focused on the removal of seven noxious weed species from selected sections of Bouquet and San Francisquito Creeks, which improved habitat quality and health for not only native plants but also several special-status wildlife species which could or do occur within the habitat present in these creeks. Additionally, the Santa Clara River Watershed Invasive Plant Treatment Project will remove invasive weeds along the Santa Clara/Mojave River Watershed.

General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-24, GP-25, GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat). Measures that would reduce the impacts of non-native plant species include mitigation measures BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities) and BIO-2 (Prevent the spread of invasive weeds). However, given the multitude of ground disturbing projects in the vicinity of all the Alternatives and difficulty in weed eradication, cumulative effects from non-native invasive plant species between BRRTP and past, present, and foreseeable projects would be significant.

Terrestrial Wildlife

Mohave Ground Squirrel (*Spermophilus mohavensis*) – The State Threatened Mohave ground squirrel has been identified on BRRTP's Segment A, and may also occur on Segments B and C. Cumulative effects may be projected onto this species with the combined influence of the effects of BRRTP with those of the Alta East Wind Project, Avalon Wind Project, Catalina Renewable Energy Project, Beacon Solar Energy Project, Lower West Wind Project, Pacific Wind Energy Project, Pine Canyon Wind Project, Pine Tree Solar Project, Windstar Wind Energy Project, Alta Wind Energy Center: Alta-Oak Creek Mojave Project, PdV Wind Energy Project, Ridge Rider Solar Park Project, Rosamond Solar Array, Willow Springs Solar Array Project, Rising Tree Wind Project, Antelope Valley Water Bank Project, AV Solar Ranch One, RE Distributed Solar Project, California High Speed Rail, TRTP, numerous parcels of land for which BLM has applied for applications to build wind or solar generation facilities, and several other projects listed above. Biological resource documents are not available for all of these projects. The Beacon Solar Energy Project identifies several project mitigation measures for Mohave ground squirrel, including a measure for a Mohave ground squirrel translocation plan, a measure for potential injury or fatality due to project construction or operation, and a statement of 115 acres of habitat to be acquired in mitigation for Mohave ground squirrel habitat loss (CEC 2010). Despite a 2006 CNDDB record within the project area, protocol surveys conducted for Mohave ground squirrel throughout the Alta-Oak Creek Mojave project area did not locate any individuals (Kern County 2009). However, habitat is present on all three sections of the project area which will be affected by construction. Should Mohave ground squirrels be present within the Alta-Oak Creek area, burrow crushing and mortality could also occur. Within the project area for the PdV Wind Energy Project, although Mohave ground squirrel was determined to be absent based on protocol surveys, there are approximately 921 acres of Mojave creosote bush within the site that could support this species (Kern County 2007). SCE determined for TRTP that Mohave ground squirrel had a possibility of occurring on TRTP Segment 4, and was present on Segment 10, which runs near BRRTP Segment C. TRTP is expected to result in habitat loss and fragmentation for the Mohave ground squirrel, along with crushing of burrows and vehicle collisions. No biological resource documents are publically available for any other of the aforementioned projects, but because they are all in the same general area as the above-described projects, they are likely to also possess suitable habitat for the Mohave ground squirrel. Because these projects will require ground to be cleared, mostly for wind or solar projects, there is potentially a very large amount of habitat that will be removed or degraded by construction of these various projects.

Construction of BRRTP, ATP, and TRTP would result in minor amounts of habitat fragmentation for Mohave ground squirrel. Transmission towers would be cleared underneath but would represent small areas of vegetation removal and would be widely spaced apart from each other, allowing ground squirrels to continue to move under and around the transmission towers and transmission lines and presenting minimal impediments to migration. Vegetation clearance on the ROWs would likely result in long-term linear areas of bare ground or minimal vegetation for the length of the transmission line; however, because the ROWs would not generally be used by the public, they would not present the same dangers to migration and levels of fragmentation as high-use roads such as SR-14 or SR-58. The various solar and wind energy development projects in the area would present higher concentrated habitat fragmentation because they would impact entire large blocks of habitat. Mohave ground squirrels would still be able to move around the facilities and possibly through them, as well, depending on any fencing used around these sites.

Loss of individuals or habitat in these areas will exert a cumulative effect on Mohave ground squirrel by reducing the local population size or removing suitable habitat. The intensity of the cumulative effect is increased due to the fact that these projects will be ongoing for several years. The CNDDB lists 302 recorded occurrences of Mohave ground squirrel in California, 301 of which are presumed extant; 50 of these occurrences are from the last decade. Leitner (2008) presented metadata showing the distribution of trapping efforts, positive and negative, for Mohave ground squirrel throughout its historic range from 1998 to 2007, and also discusses regional records in the historic range. According to Leitner (2008), from

1998 to 2007, 52 grids were surveyed according to protocol requirements in the vicinity of the desert portion of Alternative 2 in Los Angeles County. The closest of these survey grids to Alternative 3 is 2.5 miles east; the closest to Alternative 2 is 10 miles east; the closest to Alternative 1 is 13 miles southeast. The species was not detected during any of these surveys.

Edwards Air Force Base (AFB), east of the Project area, has conducted surveys for Mohave ground squirrel, detecting individuals at six of 40 grids from 2003 to 2007 in the eastern portion of the base. The closest of the positive detections within Edwards AFB is 26 miles southeast of Alternative 1, 25 miles east of Alternative 2, and 27 miles northeast of Alternative 3. An additional 20 incidental observations of the species on Edwards AFB are included in Leitner (2008), concentrated in the central area of the base and in the eastern portion of the base in the vicinity of the positive trapping efforts. The closest of these observations to BRRTP is 20 miles southeast of Alternative 1, 18.5 miles southeast of Alternative 2, and 23 miles northeast of Alternative 3. Additional trapping southwest of the unincorporated community of Mojave has been conducted, and proposed routes of both Alternatives 1 and 2 span over several of these survey grids, which are mostly focused around the Tehachapi Wind Farm. These trapping efforts have not yielded any positive results, although there are two recent (2006) observations recorded in CNDDB in the general area, one of which is 0.5 mile from Alternative 2 (Leitner 2008, CDFG 2011).

In his paper, Leitner (2008) identifies four core extant populations of Mohave ground squirrel based on incidental observations, regional surveys, and protocol survey grids, as well as several other non-core populations. While no populations are described for the BRRTP area, Leitner (2008) shows the Edwards AFB Core Area east of the BRRTP and the Little Dixie Wash Core Area north of the BRRTP, within and north of Red Rock Canyon State Park. There are also two other non-core populations that Leitner shows as being east of SR-14 and north of SR-58. The closer of these is located within and just outside of the Kern County Desert Tortoise Natural Area, four miles east of Alternative 2 at its closest point but separated from BRRTP by SR-14. Thus, if any population(s) of Mohave ground squirrel is present within the BRRTP area, it is likely small given the extensive amount of trapping that has been conducted in the general area and the general lack of recorded occurrences west of SR-14 as shown by Leitner (2008) and CNDDB (CDFG 2011). Therefore, because any population living in the BRRTP area is likely relatively small, any impacts to Mohave ground squirrels or their habitats due to BRRTP may have a large effect in this immediate area. However, the impact that BRRTP would have on populations in the general region—the aforementioned local core and non-core populations—and throughout the Mohave ground squirrel's range is relatively small in comparison.

General practices that would reduce short-term or long-term effects to Mohave ground squirrel include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Mohave ground squirrel and southern grasshopper mouse include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox). Cumulative effects on Mohave ground squirrel between BRRTP and past, present, and foreseeable projects in its vicinity are unknown, due to limited data.

Desert Tortoise (*Gopherus agassizii*) – The State and Federal Threatened desert tortoise is known to be present on BRRTP's Segment A and may also occur throughout the northern area of the project on Segments B, C, D, and E. Cumulative effects may be projected onto this species with the combined influence of the effects of BRRTP with those of the Alta East Wind Project, Avalon Wind Project, Catalina Renewable Energy Project, Beacon Solar Energy Project, Pine Canyon Wind Project, Pine Tree Solar Project, Windstar Wind Energy Project, Alta Wind Energy Center: Alta-Oak Creek Mojave Project, Antelope Valley Solar Project, Lower West Wind Project, Pacific Wind Energy Project, PdV Wind Energy Project, Ridge Rider Solar Park Project, Rosamond Solar Array, Willow Springs Solar Array

Project, Antelope Valley Water Bank Project, AV Solar Ranch One, RE Distributed Solar Project, Rising Tree Wind Project, California High Speed Rail, numerous parcels of land for which BLM has applied for applications to build wind or solar generation facilities, and several other projects listed above. Biological resource documents are not available for all of these projects. The Beacon Solar Energy Project identifies several project mitigation measures for desert tortoise, including a measure for a desert tortoise translocation plan, a measure for potential injury or fatality due to project construction or operation, and a statement of 115 acres of habitat to be acquired in mitigation for desert tortoise habitat loss (CEC 2010). Protocol desert tortoise surveys conducted for Alta-Oak Creek located two individual tortoises, scattered desert tortoise sign, and 8,436 acres of suitable habitat within the project area (Kern County 2009). The project is expected to have impacts to desert tortoise that could include mortality by vehicle collision, habitat loss and degradation, increased predation, and burrow crushing. Within the project area for the PdV Wind Energy Project, the desert tortoise was determined by literature review, consultation, and surveys to be absent (Kern County 2007). While there are 5,555 acres of suitable desert tortoise habitat on the project site, it is expected that only approximately 276.8 acres will be affected, leaving over 95% of the project area with habitat. No biological resource documents are publically available for any other of the aforementioned projects, but because they are all in the same general area as the above-described projects, they are likely to also possess suitable habitat for the desert tortoise. Because these projects will require ground to be cleared, mostly for wind or solar projects, there is potentially a very large amount of habitat that will be removed or degraded by construction of these various projects. There are additionally over 100 applications for renewable energy projects on file in the state of California (USFWS 2010c). Additional local projects have been proposed within five miles of the Proposed Action, including continuation of mining operations, construction of apartment complexes, and construction of other facilities (e.g., a proposal to build a new church) (Kern County Planning and Community Development Department 2009).

Construction of BRRTP, ATP, and TRTP would result in minor amounts of habitat fragmentation for desert tortoise. Transmission towers would be cleared underneath but would represent small areas of vegetation removal and would be widely spaced apart from each other, allowing tortoises to continue to move under and around the transmission towers and transmission lines and presenting minimal impediments to migration. Vegetation clearance on the ROWs would likely result in long-term linear areas of bare ground or minimal vegetation for the length of the transmission line; however, because the ROWs would not generally be used by the public, they would not present the same dangers to migration and levels of fragmentation as high-use roads such as SR-14 or SR-58. The various solar and wind energy development projects in the area would present higher concentrated habitat fragmentation because they would impact entire large blocks of habitat. Tortoises would still be able to move around the facilities.

There are several CNDDB records of desert tortoise along the desert portion of the Proposed Action (CDFG 2011). Three of these are within the first two northern linear miles of the Project, but two are nearby other local proposed projects, one near including existing mining facilities near Tehachapi Willow-Springs Road and Backus Road, and one within 2.25 miles of two proposed apartment communities and a proposed facilities expansion in the city of Mojave. Because both of the latter two records are located south of the aforementioned project areas, rather than north where there is less disturbance, tortoises may continue to live in these general areas and there may be some impacts to tortoises or their habitat despite the otherwise disturbed and developed nature of the areas.

Loss of individuals or habitat in these areas will exert a cumulative effect on desert tortoise by reducing the local population size or removing suitable habitat. The CNDDB lists 263 recorded occurrences for desert tortoise within California (CDFG 2011); only 23 of these are from Kern County and only one is from Los Angeles County. Fifteen of these 24 occurrences—all in Kern County—are from the last ten years, and all 24 are presumed extant. Of these, five are from the BRRTP area within the last ten years and three are of live specimens (CDFG 2011); one of these was an identification made by POWER. Tortoise population surveys have been conducted for the various desert tortoise recovery units over the last decade (USFWS 2006a, USFWS 2009a, USFWS 2010a, USFWS 2010b). Of the six recovery units

(Northeast Mojave, Eastern Mojave, Eastern Colorado, Northern Colorado, Western Mojave, and Upper Virgin River), only the Upper Virgin River Recovery Unit is completely outside of California. BRRTP would be located within the Western Mojave Recovery Unit. During surveys conducted within the recovery units, the Western Mojave Recovery Unit was determined to have the third lowest average density of desert tortoises, at 5.24 per square kilometer, but also the largest average density of the three "Mojave" recovery units, as shown in the table below. The BRRTP would not be located within any Desert Wildlife Management Areas or in the Desert Tortoise Natural Area.

Table 55. Estimated Desert Tortoise Density (/km^2) in California Recovery Units (2001 – 2010)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average
Northeast Mojave	2.32	0.84	3.01	1.42	2.15	-	1.7	-	3.4	3.2	2.26
Eastern Mojave	3.00	4.11	2.76	5.57	5.54	-	5.8	6.4	5.1	3.6	4.65
Eastern Colorado	10.80	8.28	4.00	5.38	6.38	-	5.0	5.1	-	5.8	6.34
Northern Colorado	7.95	-	6.55	7.04	7.86	-	4.6	5.8	9.2	4.4	6.68
Western Mojave	7.58	7.10	5.65	5.31	5.95	-	4.7	3.4	4.3	3.2	5.24

Numbers taken from USFWS range-wide desert tortoise monitoring annual reports (USFWS 2006a, USFWS 2009a, USFWS 2010a, USFWS 2010b)

The intensity of the cumulative effect is increased due to the fact that these projects will be ongoing for several years. Concerning the desert tortoise, the accelerated loss of habitat—combined with the increased potential for losses of fossorial or slow-moving species, such as the desert tortoise—would represent the most significant cumulative impact from the BRRTP and other nearby developments. The Proposed Action, in conjunction with other projects, would diminish habitat availability and quality, and potentially result in the "taking" of these species. Because this species can take up to 20 years to reach sexual maturity and has low reproductive rates (USFWS 2008a), any actions that stress, harm, or kill desert tortoises can be considered significant.

General practices that would reduce short-term or long-term effects to desert tortoise include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to desert tortoise include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-23 (Protect desert tortoise and habitat loss). Cumulative effects on desert tortoise between BRRTP and past, present, and foreseeable projects in its vicinity will be significant.

Non-listed Special-status Terrestrial Species – There are numerous special-status terrestrial species that are not listed by the USFWS that may occur within the southern, ANF portion and the northern, Antelope Valley and Mojave Desert portion of BRRTP. These include species listed as "sensitive" by the USFS and BLM and those listed as "species of special concern" by CDFG. Specific sensitive wildlife species and species of special concern are described in greater detail in Section 4.3.2 and Table 9. Based on known records and surveys, some of these species are expected to be more prevalent than others. Many of these animals have overlapping habitat preferences or distributions, and many will be affected by project activities, most notably habitat loss or degradation that will occur from construction and maintenance of access roads and tower sites. For the most part, many of the surrounding projects will have similar effects to the same species. The Antelope-Pardee 500 kV Transmission Line Project and Tehachapi Renewable Transmission Project run close to BRRTP and will exert cumulative effects on many species due to proximity, resulting in habitat loss in ANF and/or in the Antelope Valley and Mojave Desert, depending on species. Individual animals may be injured or killed as a result of these projects, resulting in a cumulative reduction in local or regional populations. Other wind and solar energy projects—such as the Alta East Wind Project, Avalon Wind Project, Catalina Renewable Energy Project, Beacon Solar Energy

Project, Lower West Wind Project, Pacific Wind Energy Project, Pine Canyon Wind Project, Pine Tree Solar Project, Windstar Wind Energy Project, Alta-Oak Creek Mojave Project, Ridge Rider Solar Park Project, Rosamond Solar Array, Willow Springs Solar Array Project, RE Distributed Solar Project, Rising Tree Wind Project, and PdV Wind Energy Project—may be at a greater distance from BRRTP but may still exert cumulative effects with BRRTP due to large species ranges across the Antelope Valley and western Mojave Desert. However, many of these species have relatively small distribution ranges and negative effects in different locations from several different projects could still exert negative cumulative effects with BRRTP on local populations. The effects from these projects will be long-term when considered cumulatively, as they will be constructed over several years.

Fragmentation to terrestrial species from these projects would generally be minimal for transmission lines and greater for solar and wind facilities. Transmission lines would present very little impedance to movement because the towers would be open underneath. Habitat would be removed directly underneath the towers and linearly along the ROW, but would not restrict movement of animals under or through the transmission line corridors. Solar and wind farms would potentially remove large blocks of habitat from movement corridors, most likely restricting larger animals to going around the facilities but possibly still allowing small animals to move through them, depending on the use of exclusion fencing. Animals may be discouraged from crossing through construction areas during the period of construction due to the heightened human presence, but would be expected to resume normal activity following its completion.

General practices that would reduce short-term or long-term effects to special-status terrestrial species that are not listed by the USFWS include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to special-status terrestrial species that are not listed by the USFWS include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-16 (Protect burrowing owl), BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox), and BIO-22 (Protect special-status reptile species). Cumulative effects on special-status terrestrial species that are not listed by the USFWS from BRRTP and past, present, and foreseeable projects in its vicinity are unknown, due to limited data.

Aquatic Wildlife

Arroyo Toad (*Bufo californicus*) – The Federal Endangered arroyo toad is only known to occur near Segment J of BRRTP, although due to the presence of suitable habitat, they may occur elsewhere in the Project in Segments D, G, and Segment 2a. There is a known breeding population of arroyo toads located in Castaic Creek north of the northern terminus of Segment J, which ends at Castaic Power Plant. Habitat loss is possible in Charlie Canyon, where there is a sandy streambed immediately south of ANF that is crossed numerous times by Charlie Canyon Road, which serves as an access road to the existing transmission lines. This streambed contains marginal habitat for this species.

From a historical perspective, construction and utilization of dams, reservoirs, roads, and recreational areas—particularly campgrounds—combined with agriculture and increasing urbanization from circa 1920 to 1980 devastated arroyo toad habitat and individuals, leading to its listing in 1994 (USFWS 2009b). Within the 22 river basins where arroyo toads are known to occur, there are 25 dams present; only two of these rivers do not have any dams. Dam construction has in many cases resulted in inundation of upstream habitat and reduced flow to downstream habitat, making conditions marginal or unsuitable for arroyo toads. In fall 2009, LADWP conducted a sediment removal project in Castaic Creek which resulted in the removal of arroyo toad habitat that was part of proposed critical habitat (74 FR 52611 52664). This area has now been finalized as designated critical habitat (76 FR 7245 7467). One arroyo toad was identified during preconstruction surveys and relocated upstream; no other arroyo toads were identified during construction and it is unknown if the project resulted in any injuries to or mortalities of individuals. This sediment removal project has previously been conducted every few years, allowing opportunities for habitat to redevelop in the streambed due to deposited sediment from waterflow. Any individual injuries, mortalities, or loss or degradation of suitable arroyo toad habitat on Segment J would exert a cumulative effect with the 2009 sediment removal, negatively affecting the local metapopulation in Castaic Creek. The Segment D corridor contains only a small amount of suitable habitat, which may undergo removal and degradation when project vehicles and equipment drive through it. Adjacent to Segment D is the Pacific Pipeline Storm Relocation, which may affect some arroyo toad habitat should the relocation happen to be within suitable habitat, but because of the lack of known occurrences in the area is unlikely to affect any arroyo toad individuals. On Segment G, suitable habitat for the arroyo toad is located in San Francisquito Creek and within side drainages that pass under or adjacent to the proposed segment. This habitat may be minimally affected by construction but will likely be mostly affected by BRRTP. SCE's Antelope-Pardee 500 kV Transmission Line Project, located east of Segment G in ANF, recognized that arroyo toads, if present, may be affected by construction, resulting in mortality, disruption of foraging sites or breeding behavior, habitat loss or degradation, and increased predation (Aspen 2006). However, arroyo toads are not known to be present within the Antelope-Pardee project area and were not located during project protocol surveys; the nearest sighting is a 1994 record at the confluence of San Francisquito Creek and the Santa Clara River. Minimal suitable habitat is present on Segment 2a. This habitat was part of BRRTP's 2010 arroyo toad protocol surveys, and was in the project area for LADWP's fall 2009 repair of the Elizabeth Tunnel. This action had a minimal effect to the existing habitat that was present on-site, as it removed recently eroded sediment buildup from the tunnel's outflow and restored the outflow's elevation and flowpath to approximately what it had previously been. Loss of individuals or habitat within any of these areas would exert a cumulative effect with BRRTP on the local arroyo toad population by removing individuals or suitable habitat.

Arroyo toad impacts from the Tehachapi Renewable Transmission Project are expected to be much the same as those for BRRTP. However, the Station Fire, which burned in the ANF between August and October of 2009, burned occupied arroyo toad habitat in the southern section of the ANF. This area has also been designated as critical habitat in the same ruling as the habitat at Castaic Creek. It is believed that there was a high arroyo toad mortality rate as a result of the fire, leading to a potentially significant reduction in local population size and likely temporary negative breeding conditions due to increased sedimentation, stressed toads, and degraded habitat (USFS 2010b). Additional loss of individuals or habitat as a result of TRTP would create a significant cumulative effect with the Station Fire's effects, exerting a cumulative effect with BRRTP on the regional population of arroyo toads between the northern and southern sections of the ANF.

Fragmentation as a result of BRRTP, ATP, TRTP, and other local projects is possible, but would be unlikely to create major impediments to toad movement. Habitat alteration would be expected to be minimal and only as necessary. Construction would be expected to occur outside of breeding season, when toad activity would be reduced, if they are present. If diversions are necessary for any project, such as to reduce sediment during a road expansion, then downstream habitat would be affected to an extent if water is flowing, but would be restored following completion of the required action. Long-term changes to arroyo toad movement and habitat would be minimal.

Several projects have been located within five miles of the above areas of suitable arroyo toad habitat, but are estimated to have not had any effect on the species. LADWP's PP2 Tailings Removal Project was located in San Francisquito Canyon, but was not in appropriate arroyo toad habitat and was located approximately 8.5 miles from the known population near Segment J. USFS non-native vegetation removal in Bouquet Creek also did not occur in suitable arroyo toad habitat (USFS 2010a). Relocation and construction of the Texas Canyon Fire Station and Barracks in Bouquet Canyon may have affected marginal arroyo toad habitat, but because the fire station and barracks were relocated to an existing burned site, the area is considered to have been already disturbed and any impacts to undisturbed habitat, if any, were likely small.

General practices that would reduce short-term and long-term effects to arroyo toad and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to arroyo toad and its habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-24 (Protect arroyo toad and California red-legged frog). Cumulative effects on arroyo toad between BRRTP and past, present, and foreseeable projects in its vicinity would not be significant if properly mitigated.

California Red-legged Frog (*Rana draytonii*) – The federal Threatened California red-legged frog is known to occur near Segment G of BRRTP in San Francisquito Creek in what is known as the St. Francis Dam reach. Direct impacts to individual animals are unlikely due to the distance of the corridor from the known population and the steep terrain in between. However, suitable habitat was located directly under Segment G along City Highline Road. While there are no known individuals in these locations, these areas may undergo habitat loss or degradation due to construction activity, as some transmission line spur roads pass directly through them.

Historical and current threats to the California red-legged frog include urbanization, predation by bullfrogs and other non-native aquatic species, agriculture, impoundments, channelization, mining, livestock grazing, recreation, and timber harvesting (USFWS 2002). While there were historically over 80 records of California red-legged frog populations in Southern California south of the Tehachapi Mountains, there are currently only a few known extant populations, several of which are on the Angeles National Forest (USFWS 2002). Future construction, maintenance, and public recreation in suitable habitat in the vicinity of BRRTP may negatively impact the habitat and/or individuals if present. Future ANF maintenance to reduce non-native weeds in riparian areas would likely benefit this species' habitat, depending on specific locations of treatments. Unauthorized road grading performed by LADWP on City Highline Road in 2009 resulted in both habitat loss and degradation where dirt was pushed into streambeds, but effects in areas of suitable habitat were relatively small. California red-legged frogs are not known to be present in the Project area outside of the St. Francis Dam reach. SCE's Antelope-Pardee 500 kV Transmission Line Project passed near areas that had known populations of California red-legged frogs—San Francisquito Creek and Amargosa Creek—and through an area outside ANF encompassing approximately five acres with suitable stockpond habitat (Aspen 2006). Therefore, culvert placement and construction of new access and spur roads for Antelope-Pardee could have affected California red-legged frog individuals or their habitat. Loss of individuals and habitat around Segment G due to these projects would exert a cumulative effect with BRRTP on the local population of California red-legged frogs by reducing the population size or availability of suitable habitat. A potential California red-legged frog tadpole was identified in San Francisquito Creek on Segment J during BRRTP special-status amphibian surveys. However, this was an isolated find and due to the unsuitability of habitat in the area that this tadpole was found, it is possible that the tadpole washed downstream from the occupied habitat during a heavy rain event. There are no additional projects in the vicinity of this sighting that affected or could affect this area. A new population of California red-legged frog was discovered in Aliso Creek less than one mile downstream of a road crossing for TRTP's Segment 11; SCE will avoid this crossing during construction and use a different access road to avoid directly affecting this new population. However, it is recognized that TRTP could still cause indirect effects to this population, which is already stressed and enduring in temporary breeding pools constructed by USFS and USGS; the severity of these effects would be determined based on whether or not the Station Fire had burned the area surrounding the new population (USFS 2010b). However, SCE still estimates that its cumulative effects to the new population will be minimal due to avoidance. Any effects from TRTP on California red-legged frog will exert a cumulative effect with BRRTP on the regional population of California red-legged frogs, but because the population in Aliso Creek is newly discovered, it is difficult to estimate how severe any effects would be on the local or regional scales. USFS non-native vegetation removal in Bouquet Creek likely exerted a positive effect on California red-legged frog habitat by removing noxious weeds from the creek, although this area is not known to contain a population of the species.

There are several projects in the vicinity of BRRTP's Segment G that had little or no effect on California red-legged frog. LADWP's PP2 Tailings Removal Project, located west of Segment G in San Francisquito Canyon, had little, if any, effect on California red-legged frog. The construction area was not near the occupied habitat, but project access was along Forest Road 5N27, which crosses San Francisquito Creek approximately 1.5 miles upstream of the known population. Thus, with several transport vehicles crossing through the flowing creek twice a day, sediment was generated in the water. However, silt exclusion fences were placed at the crossing along with several wattles to minimize any effects to riparian species and remove sediment from the water before it flowed downstream. LADWP's Elizabeth Tunnel repair, located west of Segment G and Segment 2a, did not affect any California red-legged frog habitat.

Fragmentation as a result of BRRTP, ATP, TRTP, and other local projects is possible, but would be unlikely to create major impediments to frog movement during seasonal migrations. Habitat alteration would be expected to be minimal and only as necessary. If diversions are necessary for any project, such as to reduce sediment during a road expansion, then downstream habitat would be affected to an extent if water is flowing, but would be restored following completion of the required action. Exclusion fences along stream crossings, such as those used for the PP2 Tailings Removal Project, may slightly reduce downstream water flow, but not to the extent that it would be expected to have an effect on red-legged frogs or their habitat. Because this species generally resides in permanent pools or deep, slow-flowing water, long-term changes to California red-legged frog movement and habitat would be minimal.

General practices that would reduce short-term and long-term effects to California red-legged frog and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to California red-legged frog and its habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-24 (Protect arroyo toad and California red-legged frog). Cumulative effects on California red-legged frog between BRRTP and past, present, and foreseeable projects in its vicinity will not be significant.

Unarmored Threespine Stickleback (*Gasterosteus aculeatus williamsoni*) – The State and federal Endangered unarmored threespine stickleback has been observed in the last several years near Segment I in Bouquet Creek. There was previously a population in San Francisquito Creek near Segment G, but it has been determined to have been extirpated after 2005 flooding (CDFG 2010). BRRTP impacts to unarmored threespine stickleback habitat in Bouquet Creek are expected to be minimal. Impacts along Segment I will likely consist only of habitat degradation due to the deposition of soil into the creek through vehicular access through the streambed to access tower sites. If water is flowing in the creek in these areas at the time of construction, this could result in mortality if fish are not properly excluded from the crossing with a barrier.

Historical losses to unarmored threespine stickleback and its habitat have occurred from channelization, urbanization, agriculture, oxygen reduction, groundwater removal, nonnative weed proliferation (especially *Arundo donax*), recreation, hazardous materials spills, and the addition or impoundment of water into streambeds (USFWS 2009c). Urbanization near creeks occupied by unarmored threespine stickleback has historically contributed to their loss, and this is expected to continue to be a concern in the future with activities such as a proposal by the Newhall Land and Farming Company to develop approximately 12,000 acres of upland habitat adjacent to areas of the Santa Clara River occupied by this species (USFWS 2009c). The Antelope-Pardee 500 kV Transmission Project, which runs roughly along Bouquet Creek, may have resulted in deposition of soils into Bouquet Creek depending on specific tower sites, the amount of material cleared, and the location of the creek in relation to Bouquet Canyon Road at that point. However, effects to unarmored threespine stickleback were not expected from this project due to avoidance of known occupied habitat unless work was required directly in the streambed for a culvert repair (Aspen 2006). In addition, sediment monitoring conducted in conjunction with ATP indicates that no measurable levels of sediment have been deposited into Bouquet Creek from this project outside of the anticipated range of sediment from this watershed. USFS' San Francisquito/Bouquet Creek weed removal project likely improved habitat for the unarmored threespine stickleback in Bouquet Creek by removing noxious weed species from the targeted section of Bouquet Creek, which is known to be occupied by this species (USFS 2010a). Habitat in San Francisquito Creek was improved as well, but this species is no longer believed to be present in the creek following heavy flooding in 2005 (CDFG 2010). There is a proposal to raise and realign Bouquet Canyon Road within the same stretch of road as the weed removal project that may affect the habitat or population of unarmored threespine stickleback present in this area; however, no project details are currently known (N. Sill personal communication 2010). This may affect the habitat or population of unarmored threespine stickleback present in this area, but no project details are currently known. Future construction actions, maintenance, and public recreation may continue to affect suitable habitat for this species within San Francisquito and Bouquet Canyons or possibly affect individuals within Bouquet Canyon.

SCE's Tehachapi Renewable Transmission Project is not expected to have any direct or indirect effects on unarmored threespine stickleback due to its being approximately six miles away from the nearest known occurrence and to the implementation of best management practices. LADWP's PP2 Tailings Removal Project did not have an effect on unarmored threespine stickleback due both to numerous barriers between the project site and San Francisquito Creek and to the extirpation of the population that previously inhabited the creek. LADWP's Elizabeth Tunnel repair project did not affect any habitat for this species.

Fragmentation of stream habitat is expected to be minimal from BRRTP and other projects. Most of the waterways in the project areas are dry for a portion of the year, and construction that would affect the streams, such as road expansions, would in many cases occur while the streams are dry. If water is flowing and the stream is diverted, there may be an effect on movement if fish are present, but this activity should still provide continuous water flow. It is not expected that construction activities would have long-term effects on fish movements.

General practices that would reduce short-term and long-term effects to unarmored threespine stickleback and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to unarmored threespine stickleback and its habitat include HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program). Cumulative effects on unarmored threespine stickleback between BRRTP and past, present, and foreseeable projects in its vicinity will not be significant if properly mitigated.

Non-listed Special-status Aquatic Species – There are several special-status aquatic species that are not listed by the USFWS that may occur within the BRRTP area, none of which are known to occur in its direct area of effect. These include species listed as "sensitive" by the USFS and BLM and those listed as "species of special concern" by CDFG. Specific sensitive wildlife species and species of special concern are described in greater detail in Section 4.3.2 and Table 9, and MIS species are discussed in the MIS Report. Impacts to riparian habitats will result in some habitat loss and degradation to the extent needed for work and will be mitigated during construction by utilizing erosion control devices—to be described in the Stormwater Pollution Prevention Plan—to minimize the amount of sediment and stormwater entering streambeds, requiring equipment to be washed before entering the Project area, restricting refueling to areas at least 500 feet outside of riparian habitat, requiring Project vehicles and equipment working within 100 feet of active streams to be inspected for fluid leaks daily, narrowing centerline width and minimizing tower pad clearances in riparian habitat to the minimum safe extent, and requiring presence of a biological monitor during construction activities. Direct injury or mortality to any of these species is unlikely unless, in the case of the southwestern pond turtle (*Actinemys marmorata pallida*), individuals happen to be in hibernation in a construction area. This is unlikely, but in the event that it does occur, it will not lead to the State or Federal listing of the species. SCE's Antelope-Pardee 500 kV Transmission Line Project was not expected to have any impacts on arroyo chub or Santa Ana speckled dace, but had the potential to disrupt southwestern pond turtles and two-striped garter snakes by crushing or disturbing individuals or removing or degrading nesting, breeding, or basking sites (Aspen 2006). However, in the TRTP project area, USGS expects that the Station Fire could have had a substantial effect on fish species both at the time of the fire and in the future due to increased sedimentation and debris, potentially leading to the extirpation of entire populations in the area (USFS 2010b). Effects from TRTP on fish populations are not expected to be increased very much, but the cumulative effects when combined with those of the Station Fire would be large. Expected effects on aquatic species from TRTP include mortality where access roads pass through flowing stream crossings, such as in the West Fork of the San Gabriel River, riparian habitat loss, and increased sedimentation from construction and vehicular crossings (Aspen 2009). However, the level of sedimentation expected from TRTP is expected to be minimal relative to expected sedimentation from the Station Fire (USFS 2010b). USFS Bouquet and San Francisquito Creeks weed removal project improved riparian habitat within the project area by removing non-native weed species from the streambed (USFS 2010a).

Fragmentation of stream habitat is expected to be minimal from BRRTP and other projects. Most of the waterways in the project areas are dry for a portion of the year, and construction that would affect the streams, such as road expansions, would in many cases occur while the streams are dry. If water is flowing and the stream is diverted, there may be an effect on movement if aquatic species are present and tied to the water (such as fish), but this activity should still provide continuous water flow. Animals that can leave the water, such as anurans, turtles, or snakes, would be less restricted by a stream diversion. It is not expected that construction activities would have long-term effects on aquatic wildlife movements.

General practices that would reduce short-term and long-term effects to special-status aquatic species that are not listed by the USFWS include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to special-status aquatic species that are not listed by the USFWS and its habitat include HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program). Cumulative effects on special-status aquatic species that are not listed by the USFWS between BRRTP and past, present, and foreseeable projects in its vicinity will not be significant.

Aerial Wildlife

Swainson's Hawk (*Buteo swainsonii*) – The USFS Sensitive and State Threatened Swainson's hawk has the potential to occur in the BRRTP area as part of its winter range or as part of a flyover on its way to South America. It was observed during surveys on Segment G in 2009 and could also occur throughout the BRRTP area within the Antelope Valley. It is unlikely that any direct injury or mortality would occur to this species as a result of BRRTP, as Swainson's hawk is not believed to be present in the area during breeding season. However, habitat loss will occur as grassland and agricultural areas are bladed to construct access roads and tower sites. This may have an effect on foraging capabilities. New transmission towers will pose a risk of electrocution and collision if not properly designed and mitigated. There are no projects in the vicinity of Segment G that would affect Swainson's hawk except for SCE's Antelope-Pardee 500 kV Transmission Line Project. This project was estimated to have approximately 315 acres of suitable foraging habitat within the ANF that could be affected, but it was determined that due to foraging travel distances and overall regional habitat suitability, effects on habitat from project implementation would be limited (Aspen 2006). SCE also estimated that implementation of prescribed transmission tower designs as described by APLIC (2006) would prevent bird—including raptor—electrocutions and that bird collisions would not substantially increase from pre-project conditions (Aspen 2006). During construction, five active Swainson's hawk nests were detected in the vicinity of the new transmission line (Aspen 2009).

In addition to effects from ATP, various projects on the ANF to establish or restore firebreaks or to revegetate disturbed areas may negatively or positively affect Swainson's hawk foraging habitat, respectively. These include projects such as the Jupiter Fuelbreak Project; the Pelona OHV, Portal Ridge, and South Portal Restoration Projects; the Santa Clara/Mojave Rivers Ranger District Plantation Maintenance Project; and the Tule Ridge/South Portal Fuels Reduction Project. Because several of these projects are in close proximity to the proposed BRRTP ROW, particularly Alternative 2a, there would be a cumulative loss of habitat where habitat is being removed or degraded for multiple projects.

Several projects in the Antelope Valley and West Mojave Desert will be conducted within Swainson's hawk territory. SCE's TRTP identifies the presence of Swainson's hawk active nests within four miles of the project area in the Antelope Valley as discovered during construction of the Antelope-Pardee project (Aspen 2009). The northern region of the project is expected to impact approximately 33.7 acres of suitable foraging habitat for this species, 4.3 acres of which will experience permanent disturbance. New transmission towers will present permanent disturbances to birds, but are expected to have less than significant impacts for bird electrocutions and collisions due to the implementation of measures described by APLIC (2006) and the installation of swan wraps on NFS lands. Swainson's hawks have a high probability of occurring near the Alta-Oak Creek Mojave Project (Kern County 2009), and although the project will present a permanent disturbance to birds, facilities will be designed according to raptor-safety measures suggested by APLIC (2006). Studies conducted at other generation facilities have determined that raptor use of nests and habitat remained approximately the same before and after facility construction (Kern County 2009). The PdV Wind Energy Project is not known to have any resident Swainson's hawks, but migrating hawks have been observed in the project area, and it is estimated that approximately 65.6 acres of grassland in the project area will be permanently affected out of a total of 1,639 acres (Kern County 2007). Grassland is used by the Swainson's hawk as foraging habitat. The Pacific Wind Energy Project also expects Swainson's hawks to be present, but will adopt mitigation measures similar to Alta-Oak Creek Mojave Project and the PdV Wind Energy Project (Kern County 2010a). Habitat loss and disturbance to foraging and breeding activity by these projects will exert a cumulative effect with BRRTP on the regional population of Swainson's hawks, which appears to be mostly migrants in this area. Additional wind projects such as the Alta East Wind Project, Avalon Wind Project, Lower West Wind Project, Pine Canyon Wind Project, Windstar Wind Energy Project, and Rising Tree Wind Project may increase risks of injury or mortality to Swainson's hawks that are in the area.

Fragmentation of Swainson's hawk habitat related to BRRTP and other transmission line projects is expected to be minimal. Linear habitat removal along the ROW would not pose major changes to habitat use or foraging abilities and, due to the relatively low human traffic on the ROW, would be expected to pose less of a danger to foraging than existing paved roads (such as SR-14 and SR-138), which experience relatively high degrees of traffic. Additional transmission lines may result in higher likelihoods of collision if hawks are flying low, and construction of transmission lines in areas where none are currently present—such as along the northern portion of Alternative 1—may have a negative impact on bird migrations. Energy development projects, such as solar and wind farms, would remove large patches of habitat and would also restrict foraging in these project areas, due to the presence of units such as solar panels. Neither transmission lines nor solar and wind farms would be expected to restrict migration of hawks, but the increase in human activity around facilities for operations and/or maintenance may temporarily deter hawks from being in a particular area. It is expected that Swainson's hawks, if present, would avoid the construction area during construction, but would begin using the area again after construction ceases.

General practices and mitigation measures to protect Swainson's hawk would be implemented during construction of the BRRTP. General practices that would reduce short-term or long-term effects to Swainson's hawk include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Swainson's hawk include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines). Cumulative effects on Swainson's hawk between BRRTP and past, present, and foreseeable projects in its vicinity would be unknown, due to limited data.

Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*) – The State Endangered, Federal Candidate western yellow-billed cuckoo is not known to occur within the BRRTP area, although suitable habitat was identified on Segment G during 2008 and 2009 surveys. Of the areas identified, not all will be affected by BRRTP construction. Dry Canyon, for instance, will not be significantly affected by construction because construction in this area is planned for the ridge above the canyon, not for the canyon bottom where most of the habitat is located. Because this species prefers to nest in willow or cottonwood forests, it may be directly affected through habitat loss from vegetation clearing, habitat degradation from the spread of non-native species, and/or direct injury or mortality if present in an area that is to be removed. Preconstruction nesting surveys and presence of a biological monitor will ideally prevent injuries or mortalities should any birds or nests be present, but complete avoidance (e.g., timing of construction for a period outside of the breeding season and/or exclusion buffers around suitable or occupied habitat) would probably be more likely to reduce the potential for take of this species.

Historical and current human disturbance, including recreation, development, and infrastructure construction, has contributed to the reduction and degradation of riparian habitat in southern California. Future construction, maintenance, and public recreation in suitable habitat in the vicinity of BRRTP may negatively impact the habitat and/or individuals of this species if present. SCE's Antelope-Pardee 500 kV Transmission Line Project estimated approximately 10 acres of habitat suitable for riparian bird species within or adjacent to the ROW; however, none of this habitat was expected to be sufficient in quantity or quality to support any western yellow-billed cuckoos (Aspen 2006). SCE's Tehachapi Renewable Transmission Project estimates a cumulatively significant and unavoidable impact to western yellow-billed cuckoos as a result of its implementation (Aspen 2009). While this species has not been documented within the TRTP project area on the ANF, some of its habitat was burned during 2009's Station Fire and any birds which may have been present in now-burned areas on the ANF could have moved into relatively undisturbed areas within the project area (USFS 2010b). Should these birds now be present within the project area, they could be affected by project construction. The Bouquet Canyon Stream Restoration and Habitat Improvement Project will likely improve habitat for this species by removing non-native plant species from the vicinity of Bouquet Creek. Fragmentation of this species' habitat is expected to be low, as movements of individuals would not be restricted by the presence of the transmission lines, and removal of riparian habitat would be minimal. Individual western yellow-billed cuckoos, if present, may avoid construction areas during construction, but are expected to resume use again after construction is completed.

There are several other projects in the area of Segment G that exerted little to no effects on the western yellow-billed cuckoo. LADWP's PP2 Tailings Removal Project, while located upslope and approximately one mile from suitable habitat within San Francisquito Canyon and approximately one mile northwest of Dry Canyon, did not have any effect on western yellow-billed cuckoo or its habitat due to a lack of any suitable habitat within or near the project area. LADWP's Elizabeth Tunnel repair project did not occur within suitable habitat for this species. There are several planned local projects that have the potential to impact riparian habitat or native bird habitat; however, the suitability of these areas for this species is unknown at this time. These projects include the expansion of an existing treatment facility, the construction of a new mining facility, the construction of several new housing developments, and construction and reorganization of facilities on an existing film site. While some of these projects require Mitigated Negative Declarations and are assumed to have less than significant biological impacts with required mitigation, the effects of all projects together may create a cumulative impact on riparian habitat. This species is known to be present on-site or in the vicinity of the proposed Entrada housing development south of Six Flags Magic Mountain (LA County Department of Regional Planning 2011, case 00-210). It is unclear if this is a historical or current record and where exactly it is located. Future ANF maintenance to reduce non-native weeds in riparian areas would likely benefit this species' habitat depending on specific locations of treatments.

General practices that would reduce short-term or long-term effects to western yellow-billed cuckoo and to riparian habitat include GP-5, GP-7, GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to western yellow-billed cuckoo include HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat). Cumulative effects on western yellow-billed cuckoo between BRRTP and past, present, and foreseeable projects in its vicinity would be unknown, due to limited data.

Southwestern Willow Flycatcher (*Empidonax traillii extimus*) – The State and federal Endangered southwestern willow flycatcher is known to occur within Segment G of BRRTP, and other suitable habitat was identified on Segment G during 2008 and 2009 surveys. It has also been observed as a migrant species around Bouquet Canyon, but it is unknown whether any breeding populations are present (Aspen 2006). Willow flycatchers have been observed in San Francisquito Canyon in surveys by Tierra Madre Consultants and PCR Services Corporation, but these were not identifiable to subspecies (Tierra Madre Consultants 1999, PCR Services Corporation 2001). Destruction of riparian habitat is expected to be minimal and only as needed for construction of new access roads. Disturbance and displacement may occur to any individuals that are present and near construction, but direct injury or mortality is unlikely unless breeding populations are in fact present. Indirect impacts may occur through the spread of non-native weed species, which will degrade the species' native habitat.

Historical and current human disturbance, including recreation, development, infrastructure construction, channelization, grazing, nonnative plant proliferation (particularly from tamarisk), and water diversion and impoundment has contributed to the reduction and degradation of riparian habitat in southern California. At the time of listing, it was estimated that California had lost 91% of its wetland habitat (60 FR 10695 10715). Approximately 10 acres of suitable riparian habitat is present within or adjacent to SCE's Antelope-Pardee 500 kV Transmission Line Project. While southwestern willow flycatcher is not expected to be present in heavily accessed areas such as Bouquet Canyon Road, it may be present in isolated areas such as Haskell Canyon, and SCE implemented appropriate mitigation measures to minimize impacts to any potential birds as much as possible during construction (Aspen 2006). Southwestern willow flycatcher was determined to be likely to occur in TRTP Segments 5, 6, 7, 8, and 11 due to sightings of willow flycatchers of an undetermined subspecies (Aspen 2009). Additionally, TRTP is within the southwestern willow flycatcher's historical range and still contains suitable habitat to support it. Construction adjacent to riparian areas could disrupt breeding and possibly lead to nest abandonment and subsequent mortality, but SCE will implement mitigation measures to reduce potential effects to any individuals that may be present. Prior to the Station Fire, southwestern willow flycatchers were known to use the burned areas sparingly, but if they moved into the project area following the fire, then potential impacts to individuals and habitat from TRTP would be more severe (USFS 2010b). USFS Bouquet and San Francisquito Creeks weed removal project would have benefited the species by improving the quality of its habitat within the project area through removal of non-native plants.

There are several other projects in the area of Segment G that exerted little to no effects on the southwestern willow flycatcher. LADWP's PP2 Tailings Removal Project, while located upslope and approximately one mile from suitable habitat within San Francisquito Canyon and approximately one mile northwest of Dry Canyon, did not have any effect on southwestern willow flycatcher or its habitat due to a lack of any suitable habitat within or near the project area. LADWP's Elizabeth Tunnel repair project also did not occur within suitable habitat for this species. These projects did not result in any habitat fragmentation for this species.

Fragmentation of this species' habitat is expected to be low, as movements of individuals would not be restricted by the presence of the transmission lines, and removal and degradation of riparian habitat would be minimal due to the implementation of mitigation measures in areas of suitable habitat. These measures would help to avoid impacts within riparian conservation areas and other areas of suitable riparian habitat. Individual least Bell's vireos, if present, may have avoided construction areas during construction of ATP or may avoid the area during construction of TRTP or BRRTP, but are expected to resume use again following construction completion.

There are several planned local projects that have the potential to impact riparian habitat or native bird habitat; however, the suitability of these areas for this species is unknown at this time. These projects include the expansion of an existing treatment facility, the construction of a new mining facility, the construction of several new housing developments, and construction and reorganization of facilities on an existing film site. While some of these projects require Mitigated Negative Declarations and are assumed to have less than significant biological impacts with required mitigation, the effects of all projects together may create a cumulative impact on riparian habitat. Future construction, maintenance, public recreation, and streambed alteration in suitable habitat in the vicinity of BRRTP may negatively impact the habitat and/or individuals of this species if present. Future ANF maintenance to reduce non-native weeds in riparian areas would likely benefit this species' habitat depending on specific locations of treatments.

General practices that would reduce short-term or long-term effects to southwestern willow flycatcher and to riparian habitat include GP-3, GP-5, GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to southwestern willow flycatcher include HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat). Cumulative effects on southwestern willow flycatcher between BRRTP and past, present, and foreseeable projects in its vicinity would be unknown, due to limited data.

Peregrine Falcon (*Falco peregrinus*) – The USFS Watch List and State Endangered peregrine falcon is not known to occur in the BRRTP area, but has the potential to occur along several segments in the ANF due to habitat availability, although nesting habitat may be limited by a lack of cliff-type areas. Because its habitat is primarily located in riparian areas, there will likely only be a small amount of habitat loss from BRRTP, as riparian areas and water bodies will be impacted as minimally as possible. The Antelope-Pardee 500 kV Transmission Project also identified a potential for peregrine falcon to occur, although it also cited a lack of nesting habitat. Based on the alignment for the Antelope-Pardee transmission corridor, impacts to peregrine falcon habitat were likely negligible, as riparian habitat is scarce. Peregrine falcon was identified as present or possibly present on several segments of the Tehachapi Renewable Transmission Project, mainly as migrants. Construction in these areas may result in habitat loss depending on where the habitat is located in relation to construction plans. However, peregrine falcon has a very large yearlong range covering almost all of the California coast and about half of the eastern side of California, and a winter range covering most of California's interior (CDFG 2008d), and therefore will likely be largely unaffected by the relatively small amounts of habitat that will be lost around these project areas. Construction of all three of these transmission projects may benefit peregrine falcon by providing roosting sites or nesting sites on the towers, but at the same time may increase the risk to the species—as with all raptors—of collision, which will require appropriate mitigation and tower designs.

While not detected during any surveys, the peregrine falcon could use the Alta-Oak Creek Mojave Project site for foraging, although roosting and nesting habitat is not present (Kern County 2009). If this is the case, this project could increase collision potential and also remove foraging habitat during construction. Collision with turbines would remain a significant and unavoidable long-term impact for the Alta-Oak Creek project area. The Pacific Wind Energy Project also contains suitable foraging habitat that could be removed or degraded by project implementation and would also increase collision potential, but peregrine falcons are not known to reside in this project area, either (Kern County 2010a). A single peregrine falcon was observed migrating through the PdV Wind Energy Project site, and summer residents are also known to be located nearby (Kern County 2007). Foraging habitat and resting habitat are located on-site, but nesting and roosting habitat are not present. The PdV Wind Energy Project is not expected to increase collisions with its wind turbines, which would have a collision zone between 200 and 400 feet above the ground; in contrast, a study of flight behavior showed that peregrine falcons routinely fly above 400 feet and were never observed flying below this height during the study (Kern County 2007). However, any impacts to the species would still be regarded as significant due to its listing status. Loss of foraging habitat as a result of the PdV Wind Energy Project is expected to be approximately 4% of the existing suitable habitat on-site. Additional wind projects such as the Alta East Wind Project, Avalon Wind Project, Lower West Wind Project, Pine Canyon Wind Project, Windstar Wind Energy Project, and Rising Tree Wind Project may increase risks of injury or mortality to peregrine falcons that are in the area.

Plans by the USFS to remove weeds and restore riparian habitat in the ANF may improve habitat for this species if suitable cliff habitat is present nearby for nesting. This would include projects such as the Santa Clara River Watershed Invasive Plant Treatment Project. Effects to riparian areas from the BRRTP may cause cumulative impacts with these projects where riparian habitat is being affected. In some cases the net change may be positive where habitat is being greatly improved. However, suitable cliff habitat is not in abundance in the riparian areas that are within or adjacent to the BRRTP.

Fragmentation of peregrine falcon habitat related to BRRTP and other transmission line projects is expected to be minimal. Linear habitat removal along the ROW would not pose major changes to habitat use or foraging abilities and, due to the relatively low human traffic on the ROW, would be expected to pose less of a danger to foraging than existing paved roads (such as SR-14 and SR-138), which experience relatively high degrees of traffic. Additional transmission lines may result in higher likelihoods of collision if falcons are flying low, and construction of transmission lines in areas where none are currently present—such as along the northern portion of Alternative 1—may have an impact on bird migrations. Energy development projects, such as solar and wind farms, would remove large patches of habitat and would also restrict foraging in these project areas, due to the presence of units such as solar panels. Neither transmission lines nor solar and wind farms would be expected to restrict migration of falcons, but the increase in human activity around facilities for operations and/or maintenance may temporarily deter falcons from being in a particular area. It is expected that peregrine falcons, if present, would avoid the construction area during construction, but would begin using the area again after construction ceases.

General practices that would reduce short-term or long-term effects to peregrine falcon include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to peregrine falcon include include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines). Cumulative effects on peregrine falcon between BRRTP and past, present, and foreseeable projects in its vicinity would be unknown, due to limited data.

California Condor (*Gymnogyps californianus*) – The State and federal Endangered California condor is known to be present along Alternate 1 and the reconductoring corridor south of Haskell Canyon, and has been known to fly over Alternatives 2, 2a, and 3 at lesser frequency. Direct impacts to this species would include habitat loss and/or degradation from construction of access roads and tower sites, as well as a disruption of potential foraging habitat due to construction disturbance. Indirect impacts include injury or mortality resulting from the spread and subsequent ingestion by condors of microtrash, as well as from the increased risk of collision as a result of new transmission towers. Based on recorded observations of this species as supplied by the U.S. Fish and Wildlife Service (2009d), California condors are not expected to be nesting in the project corridors and likely nest away from the proposed corridors. They may, however, use areas within the Project vicinity for foraging. However, as the condor population continues to grow over time and as resources within its historic range become more limited, the probability of condors expanding outside of their current range is likely to increase. Historical threats to California condor populations and individuals have included poisoning (lead, cyanide, and copper), DDT and DDE leading to thinned eggshells, and power line collisions (USFWS 1996b).

Several projects are present in the general BRRTP area that may also have effects on this species. Both nearby transmission projects, the ATP and the TRTP, identify the possibility of California condors occurring within their respective project areas. Expected effects from both projects are largely the same as those from BRRTP, but with proper mitigation, are deemed to be at a level that is less than significant. Suitable habitat for this species is present within the three subareas of the Alta-Oak Creek Mojave Project, although the condor is expected to have a low potential to occur based on its actual known range, which does not include the Mojave Desert as anything other than a transient area (Kern County 2009). Effects to California condor as a result of the construction of the Alta-Oak Creek Mojave Project include a reduction in potential foraging habitat, disturbance from human activities and presence, exposure to micro-trash and ethylene glycol antifreeze, and collision and/or electrocution with the turbines and transmission lines. With implementation of mitigation measures, the effects on California condors from the Alta-Oak Creek Mojave Project are expected to be less than significant.

Similarly, it was determined that California condors have a low potential to occur within the Pacific Wind Energy Project area due to it being outside condor's historical range. USFWS GPS data shows condor movement approximately three miles from the Pacific Wind Energy Project area; however, condors are currently not known to consistently utilize areas outside of their historic range and this area only represents marginal foraging habitat and no nesting habitat (Kern County 2010a). Additionally, a model developed by the Pacific Wind Energy Project proponent to determine "probability of use" by condors of areas within and adjacent to the project supports the conclusion that California condor has a low probability of occurring within the Pacific Wind Energy Project. Impacts to California condors as a result of construction of the Pacific Wind Energy Project include a reduction in potential foraging habitat, disturbance from human activities and presence, exposure to micro-trash and ethylene glycol antifreeze, and collision and/or electrocution with the turbines and transmission lines. However, unlike the Alta-Oak Creek Mojave Project, impacts from the Pacific Wind Energy Project are considered significant and unavoidable even after mitigation. Additional wind projects such as the Alta East Wind Project, Avalon Wind Project, Lower West Wind Project, Pine Canyon Wind Project, Windstar Wind Energy Project, PdV Wind Energy Project, Ridge and Rising Tree Wind Project may increase risks of injury or mortality to California condors that may enter the project areas, but because these projects are outside of the historical range of the condor, the cumulative risk is low.

Some of the projects in the area did not analyze impacts to California condor or do not currently have environmental analysis documents available. The PdV Wind Energy Project determined that California condors would not occur within the project area and does not analyze any project effects to it (Kern County 2007). The Rosamond Solar Project also did not analyze California condor (Kern County 2010b). The AV Solar Ranch One Project determines that condors are unlikely to occur in the project area except for flyovers and did not analyze any impacts to them (Los Angeles County 2010). Environmental analysis documents for other energy projects in the BRRTP vicinity are not available. It can be assumed that projects in the vicinity of the aforementioned projects would have the same likelihood of occurrence of California condors. The planned unincorporated community of Centennial will be built immediately south of California condor critical habitat on Tejon Ranch, and will likely have an effect on condors in this area. However, a draft Environmental Impact Report is not yet available for this project. Forest management projects do not all have environmental analysis documents available, but are generally unlikely to appreciably affect California condors based on their relatively small scales.

Localized projects in the BRRTP vicinity that could impact the California condor based on its known flyover areas include the Pacific Pipeline Storm Relocation, a proposed surface mining and processing operation just south of the Los Angeles River Ranger District of the Angeles National Forest in the San Fernando area (LA County Department of Regional Planning 2011, case 01-154), and a proposed housing development just north of the Santa Clara/Mojave Rivers Ranger District near Canyon Country (LA County Department of Regional Planning 2011, case R2007-01655). These are on the edges of heavy residential development and, while unlikely to create strong additional disturbances due to the adjacent development, they will create additional visual disturbance. Human activity may restrict the activity and/or presence of California condors in these areas.

Because this species utilizes very large areas for foraging, it is not expected that it would be affected by habitat fragmentation related to BRRTP or the other transmission line projects. Solar and wind farms would remove larger areas of habitat, but California condors are not expected to occur within these project areas due to their tendency to remain within their historic range and mostly avoid the Mojave Desert.

General practices that would reduce short-term or long-term effects to California condor include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to California condor include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-18 (Protect California condor). Formal consultation is being conducted with the USFWS to determine if any additional protection measures other than those mentioned above are necessary to protect California condors. Cumulative effects on California condor between BRRTP and past, present, and foreseeable projects in its vicinity would be unknown, due to limited data.

Bald Eagle (*Haliaeetus leucocephalus*) – The USFS sensitive and State Endangered bald eagle has the potential to occur near BRRTP Segments D and J, where there is a large, open body of water at Castaic Reservoir. Direct impacts to this species include habitat loss for construction of access roads and tower sites, as well as disruption from construction. Indirect impacts may include increased risk of electrocution and collision with transmission towers unless properly designed and mitigated. Overall impacts to bald eagle from BRRTP will be small due to the overall lack of suitable habitat in the Project area, the general lack of sightings on ANF, and the degree of existing disturbance such as at the Castaic Lake State Recreation Area. No impacts from SCE's Antelope-Pardee 500 kV Transmission Line Project were expected and this species was not described in detail in project documents (Aspen 2006). Long-term impacts from SCE's Tehachapi Renewable Transmission Project include increased risk of electrocution and collision as a result of new transmission lines; however, towers and lines for TRTP will be designed and constructed according to raptor-safety guidelines suggested by APLIC (2006).

Numerous other projects are located near Segments D and J, including the construction of the unincorporated community of Centennial, the Pacific Pipeline Storm Relocation, LADWP's Castaic Power Plant Sediment Removal Project, LADWP's PP2 Tailings Removal Project, the Old Ridge Route Storm Damage Repairs, the LA County Templin Highway and Drainage Project, and USFS Bouquet and San Francisquito Creeks weed removal efforts. However, none of these projects is in an area of suitable habitat for the bald eagle. The Pacific Pipeline Storm Relocation will be in areas near to the proposed Segment D centerline, but would not affect flight patterns or any available nesting habitat for the bald eagle. No other projects in the BRRTP vicinity are expected to impact the bald eagle based on the general lack of suitable habitat and lack of projects in areas that are in suitable habitat. Cumulative effects would therefore likely be low. General practices and mitigation measures to protect bald eagle would be implemented during construction of the BRRTP.

Habitat fragmentation is expected to be minimal. Areas along the proposed BRRTP routes where suitable bald eagle foraging habitat occurs are far enough away from the proposed and existing transmission lines that any foraging would be unlikely to be negatively impacted. There is also a lack of suitable nesting habitat within and around the Project area. Some bald eagle foraging and nesting habitat is present near Segments 6, 7, and 11 of TRTP; however, bald eagles are not known to be present in these areas (Aspen 2009). Along TRTP Segment 8, where bald eagles are known to be present, there is no foraging or nesting habitat. Suitable habitat for the bald eagle was present in the vicinity of the ATP around Bouquet Reservoir, which is three miles east of BRRTP Alternative 2, but bald eagles are not expected to occur in this area or in the Angeles National Forest (Aspen 2006).

General practices that would reduce short-term or long-term effects to bald eagle include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to bald eagle include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-17 (Protect the bald eagle and golden eagle). Cumulative effects on bald eagle between BRRTP and past, present, and foreseeable projects in its vicinity would be unknown, due to limited data.

Coastal California Gnatcatcher (*Polioptila californica californica*) – The federal threatened coastal California gnatcatcher is known to be present on BRRTP's Segments K and D. Areas where it has been identified on Segment K include the Castaic Golf Course, an area that is bounded by residential communities and business parks in the City of Sylmar; on Segment D it has been observed in the vicinity of the Castaic Lake State Recreation Area. Direct impacts on Segment K will consist of habitat loss as needed to reestablish access to transmission towers for reconductoring or to create pulling/tensioning sites or staging or storage areas. It is expected that one or two staging areas five acres in size would be located generally in the center of the Project or at either end of the transmission line route; however, locations of these areas have not yet been determined. No new towers will be built along this segment. Human presence may also disrupt any individuals in the area, and if these individuals are nesting, this may cause them to abandon their nests, potentially resulting in mortality of the young. Indirect impacts may result from the spread of non-native weed species that may be tracked into the area by Project vehicles and equipment, as well as the deposition of dust onto vegetation that may occur, which can cause reductions in plant vigor.

According to USFWS, historical factors that have contributed to the loss of habitat and decline of this species include urban and agricultural development, wildfires, grazing, and habitat type conversions (USFWS 2010d). At the time of its listing, the coastal California gnatcatcher had already lost 58 to 61% of its habitat in Orange, Riverside, and San Diego Counties, which were estimated to support approximately 99% of the gnatcatchers in 1993. Los Angeles County populations were estimated to be nearly extirpated at this time. Although several regional plans to protect suitable habitat are now in place, urban development and expansion remains a problem in the Southern California area. Furthermore, because wildfires—an annual problem in Southern California—typically burn most or all of the aboveground biomass in coastal scrub habitats, not only can it exclude gnatcatchers from utilizing burned areas for anywhere from three to eight years following a fire until the plants regrow, but overly frequent fires can contribute to type conversions, typically resulting in the spread of nonnative grassland. Finally, grazing has been a historical contributor to habitat loss for this species, also resulting in habitat type conversions in areas of overgrazing.

LADWP's Castaic-Olive Tower 247-5 Stream Diversion in winter 2009/2010 resulted in the removal of coastal sage scrub from the banks of Grapevine Creek, but the species was not removed from the area and was observed foraging on-site by the biological monitor following construction. Approximately three miles of Segment K immediately north of this site fall within designated critical habitat for this species. The Antelope-Pardee 500 kV Transmission Line Project was identified to occur within suitable patches of coastal sage scrub habitat along approximately 4.6 miles of the transmission line. Although coastal California gnatcatchers were not known to reside within this habitat, the potential remained for habitat loss and for disruption of nesting pairs should they be present during construction (Aspen 2006). This area is also subject to urbanization and ongoing development (Aspen 2006). Thus, while the new ATP transmission line may have minimal effects on habitat fragmentation, continual development may reduce existing habitat and/or present impediments to movement between patches of habitat. Mitigation measures including presence/absence surveys and construction timing restrictions were enforced during construction of Antelope-Pardee to minimize potential impacts to this species. The Tehachapi Renewable Transmission Project deemed coastal California gnatcatcher to be unlikely to occur or absent in all project segments near BRRTP; however, Segments 7 and 8 of TRTP are known to have coastal California gnatcatcher present (Aspen 2009). Out of approximately 869 acres of coastal sage scrub habitat mapped within the TRTP project area, 38 acres—approximately four percent—are estimated to be affected by implementation of TRTP. Impacts to this species as a result of TRTP include disruption of breeding activity, habitat loss and degradation, and increased potential for collision with transmission lines. These effects will be mitigated through preconstruction surveys and use of exclusion buffers as necessary. Effects on coastal California gnatcatcher as a result of the construction of these projects will result in habitat loss and impacts to both local and regional populations. TRTP Segments 7 and 8 cross through designated critical habitat for this species (Aspen 2009). Various residential development projects in the TRTP area are expected to continually fragment coastal California gnatcatcher habitat. Additional development and urbanization within the general BRRTP vicinity may continue to reduce and/or fragment suitable coastal California gnatcatcher habitat.

Several other projects occur near Segments D, J, and K, including the construction of the community of Centennial, the Pacific Pipeline Storm Relocation, LADWP's Castaic Power Plant Sediment Removal Project, LADWP's PP2 Tailings Removal Project, and USFS Bouquet and San Francisquito Creeks non-native vegetation removal project. None of these project areas contains suitable habitat for this species and they will have no effect on the coastal California gnatcatcher. A future planned mining operation and processing area would occur within coastal sage scrub, including habitat that may be suitable for coastal California gnatcatcher (LA County Department of Regional Planning 2011, case 01-154). Total vegetative impacts are expected to be 25 acres, although it is unknown how much of this is gnatcatcher habitat. There is a proposed housing development called Entrada located south of Six Flags Magic Mountain and west of I-5 (LA County Department of Regional Planning 2011, case 00-210). There is coastal sage scrub located on this site, but it is unknown at this time how much habitat would be affected. Future construction, maintenance, and human presence and recreation in areas of suitable habitat in the Project vicinity may negatively impact this species or its habitat, exerting cumulative effects with BRRTP.

Habitat fragmentation associated with the BRRTP, ATP, and TRTP is expected to be low due to the relatively minor movement impediments caused by transmission lines. Vegetation would generally be removed at tower sites and on access roads, but would not otherwise prevent movement between habitat patches. The largest area of suitable habitat for the coastal California gnatcatcher within the BRRTP area is located along the southern end of the reconductoring area, where the BRRTP would pass through 2.9 miles of designated critical habitat Unit 13 and where additional occupied patches of suitable habitat are located within the Cascades Golf Course. However, LADWP's existing transmission line transects this area and does not present a boundary to daily gnatcatcher movement. The reconductoring of the existing transmission line and the construction of a new line are not expected to present noticeably greater impediments to coastal California gnatcatcher movement, with the exception of the temporary disturbance associated with construction.

General practices that would reduce short-term or long-term effects to coastal California gnatcatcher include GP-8, GP-24, GP-33, GP-34, GP-35, GP-41, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term and long-term effects to coastal California gnatcatcher include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-15 (Protect coastal California gnatcatcher and its habitat). Cumulative effects on coastal California gnatcatcher between BRRTP and past, present, and foreseeable projects in its vicinity would be significant.

Least Bell's Vireo (*Vireo bellii pusillus*) – The State and Federal Endangered least Bell's vireo is known to be present on BRRTP's Segment D near Castaic Lake and Castaic Lagoon and may also occur on Segment G. Direct impacts to this species will be habitat loss and/or degradation as well as mortality or injury of any birds that are in the area during construction activities on access roads and tower sites. Construction noise and presence may also disrupt or displace birds, which may lead to mortality of young if the bird is nesting at the time. Project equipment and vehicles will have the potential to carry non-native weed seeds which may be spread and will lead to habitat degradation.

Historical threats to the least Bell's vireo have included urbanization, grazing, agriculture, and proliferation of non-native plants (USFWS 2006b). As urbanization has increased and brought more humans into contact with riparian areas, livestock grazing and agriculture have decreased as these lands are converted and developed. While efforts have been underway to reduce the presence of giant reed (*Arundo donax*) within riparian areas, other exotic species such as tamarisk (*Tamarix* sp.) and perennial pepperweed (*Lepidium latifolium*) remain of concern. Future construction, maintenance, and public recreation in suitable habitat in the vicinity of BRRTP may negatively impact the habitat and/or individuals of this species if present. Approximately 10 acres of suitable riparian habitat is present within or adjacent to SCE's Antelope-Pardee 500 kV Transmission Line Project (Aspen 2006). Impacts expected to this species as a result of Antelope-Pardee's construction included disturbance from construction and temporary and permanent habitat loss. SCE's Tehachapi Renewable Transmission Project expected least Bell's vireo to have a possibility of occurring along Segments 6 and 11, in the southern portion of the ANF, and to be present in nests along Segments 7 and 8 in the southeastern portion of the project (Aspen 2009). On these two latter segments, it is estimated that the proposed project will result in the loss of 0.5 acre of southern willow scrub on Segment 7 and one acre of southern sycamore alder riparian woodland on Segment 8, some of which may currently or in the future be occupied by least Bell's vireo. While no individuals are currently known to reside within the TRTP project area outside of Segments 7 and 8, it is possible that following the Station Fire in 2009, any individuals that occupied areas that were burned by the fire could have moved into unburned areas within the project area (USFS 2010b). Possible effects on least Bell's vireo resulting from TRTP include disruption of nesting, loss of young due to nest abandonment, habitat loss and degradation, and increased collision potential with new transmission lines. USFS Bouquet and San Francisquito Creeks Weed Removal Project occurred within suitable habitat for the least Bell's vireo, although the species is not known to be present within the area (USFS 2010a). Because it consisted of removal of noxious weeds, there may have been a slight improvement in habitat suitability and quality. Impacts from these four projects would affect both the local and regional populations of least Bell's vireo and/or its habitat.

Several other projects occur near Segments D and G, including the construction of the community of Centennial, the Pacific Pipeline Storm Relocation, LADWP's Castaic Power Plant Sediment Removal Project, LADWP's PP2 Tailings Removal Project, and LADWP's Elizabeth Tunnel repair project. None of these project areas contains suitable habitat for this species and they will have no effect on the least Bell's vireo. There are several planned local projects that have the potential to impact riparian habitat or native bird habitat; however, the suitability of these areas for this species is unknown at this time. These projects include the expansion of an existing treatment facility, the construction of a new mining facility, the construction of several new housing developments, and construction and reorganization of facilities on an existing film site. While some of these projects require Mitigated Negative Declarations and are assumed to have less than significant biological impacts with required mitigation, the effects of all projects together may create a cumulative impact on riparian habitat. Future ANF maintenance to reduce non-native weeds in riparian areas would likely benefit this species' habitat, depending on specific locations of treatments.

Fragmentation of this species' habitat is expected to be low, as movements of individuals would not be restricted by the presence of the transmission lines, and removal and degradation of riparian habitat would be minimal due to the implementation of mitigation measures in areas of suitable habitat. These measures would help to avoid impacts within riparian conservation areas and other areas of suitable riparian habitat. Individual least Bell's vireos, if present, may have avoided construction areas during construction of ATP or may avoid the area during construction of TRTP or BRRTP, but would be expected to resume use again following construction completion.

General practices that would reduce short-term or long-term effects to least Bell's vireo and to riparian habitat include GP-3, GP-5, GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to least Bell's vireo include HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat). Cumulative effects on least Bell's vireo between BRRTP and past, present, and foreseeable projects in its vicinity would be unknown, due to limited data.

Non-listed Special-status Aerial Species – There are several special-status aerial species that are not listed by the USFWS which may occur in the BRRTP area, some of which are known to be present based on project surveys. These include species listed as "sensitive" by the USFS and BLM and those listed as "species of special concern" by CDFG. Specific sensitive wildlife species and species of special concern are described in greater detail in Section 4.3.2 and Table 9, and MIS species are discussed in the MIS Report. Impacts to these include habitat loss and/or degradation and possible injury or mortality if they happen to be present in a designated work area, particularly during nesting season. Species such as the burrowing owl may be crushed by construction if present in undetected burrows. Construction activity may result in dust deposition on vegetation, which will cause habitat degradation through loss of plant vigor. Individuals will likely be displaced or disturbed by construction noise and human presence. There are several transmission line, wind, or solar energy projects within the BRRTP project vicinity along the ANF, Antelope Valley, and Mojave Desert. These include the Alta East Wind Project, Avalon Wind Project, Catalina Renewable Energy Project, Beacon Solar Energy Project, Lower West Wind Project, Pacific Wind Energy Project, Pine Canyon Wind Project, Pine Tree Solar Project, Windstar Wind Energy Project, Alta Wind Energy Center: Alta-Oak Creek Mojave Project, PdV Wind Energy Project, Ridge Rider Solar Park Project, Rosamond Solar Array, Willow Springs Solar Array Project, RE Distributed Solar Project, Rising Tree Wind Project, Tehachapi Renewable Transmission Project, Antelope-Pardee 500 kV Transmission Project, and various parcels of land for which the BLM has applied to develop for wind or solar generation. Additional projects in the BRRTP area include the Antelope Valley Water Bank Project, the California High Speed Rail, the construction of the unincorporated community of Centennial, the Pacific Pipeline Storm Relocation, and the ongoing Castaic Power Plant Sediment Removal. In addition to removing habitat where applicable, wind generation projects will result in increased obstacles to birds' flight patterns, potentially resulting in mortalities. Solar generation projects may remove foraging habitat in applicable areas by effectively blanketing large plots of land with solar panels. Transmission lines will increase electrocution and collision risks while also providing new perching or nesting opportunities for raptors. Development projects such as the Fairmont Butte Motorsports Park and the unincorporated community of Centennial may remove habitat for birds such as the burrowing owl and the loggerhead shrike. Ongoing maintenance operations at Castaic Power Plant consisting of sediment removal from Castaic Creek will remove freshwater marsh habitat if this habitat continues to grow in the future following the most recent operation in fall 2009. Cumulative effects from these projects may result in the loss or degradation of habitat and reduced size of local or regional populations depending on species and project locations.

All of these actions may result in varying degrees of habitat fragmentation for different avian species. Transmission line projects would remove vegetation at tower sites and along ROW access roads, but would not present impediments to bird movement and migration, although they may result in increased collision and/or electrocution risk. Solar and wind development projects would remove large blocks of suitable habitat and may restrict birds from foraging in these areas due to the flight danger (such as from wind projects). Areas of urbanization would also remove habitat and may not have the same risks to bird safety, but would instead have increased human presence, possibly discouraging or reducing bird use of these areas. Depending on the amount of suitable habitat in and around these various projects, there may be varying degrees of habitat fragmentation as a result of their implementation.

General practices that would reduce short-term or long-term effects to special-status aerial species that are not listed by the USFWS include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to special-status aerial species that are not listed by the USFWS include HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), BIO-17 (Protect the bald eagle and golden eagle), and BIO-20 (Protect California spotted owl). Cumulative effects on special-status aerial species that are not listed by the USFWS between BRRTP and past, present, and foreseeable projects in its vicinity will not be significant if properly mitigated.

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11.0 Acronyms and Abbreviations

AC	Alternating Current
ACSS/AW	aluminum conductor steel supported/aluminum-clad steel wire
ACSS/TW/HS	aluminum conductor steel supported/trapezoidal wires/high strength
ANF	Angeles National Forest
APLIC	Avian Power Line Interaction Committee
BC	Back Country
BLM	Bureau of Land Management
BMP	Best Management Practices
BR-RIN	Barren Ridge-Rinaldi Transmission Line
BRRTP	Barren Ridge Renewable Transmission Project
CDFG	California Department of Fish and Game
CDPR	California Department of Pesticide Regulation
CDNPA	California Desert Native Plants Act
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CNDDB	California Natural Diversity Database
CFR	Code of Federal Regulations
CNPPA	California Native Plant Protection Act
CNPS	California Native Plant Society
CSC	California Species of Special Concern
CWA	Clean Water Act
DC	Direct Current
EPA	Environmental Protection Agency
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
ESA	Endangered Species Act
GANDA	Garcia and Associates
GAP	Gap Analysis Program
GIS	Geographic Information System
GPS	Global Positioning System
kcmil	Thousand circular mil (formerly MCM)
kV	Kilovolt
LADWP	Los Angeles Department of Water and Power
MBTA	Migratory Bird Treaty Act
MIS	Management Indicator Species
MW	Megawatt
NEPA	National Environmental Policy Act
NFS	National Forest System
NFMA	National Forest Land Management Act
NPS	National Park Service
NWP	Nationwide permit
PDCI	Pacific Direct Current Intertie
POWER	POWER Engineers, Inc.
RCA	Riparian Conservation Area
ROD	Record of Decision (NEPA)
ROW	Right-of-way

RWQCB	Regional Water Quality Control Board
SCAG	Southern California Association of Governments
SCE	Southern California Edison
SEA	Significant Ecological Area
SETAC	Significant Ecological Area Technical Advisory Committee
TRTP	Tehachapi Renewable Transmission Project
TSP	Tubular steel pole
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
USFS	U.S. Department of Agriculture, Forest Service
USFWS	United States Fish and Wildlife Service
WEAP	Worker Environmental Awareness Program
WMP	West Mojave Plan

APPENDIX A: MAPS OF SPECIAL-STATUS WILDLIFE OCCURRENCES ON ANGELES NATIONAL FOREST (ANF) LANDS WITHIN THE BRRTP PROJECT AREA

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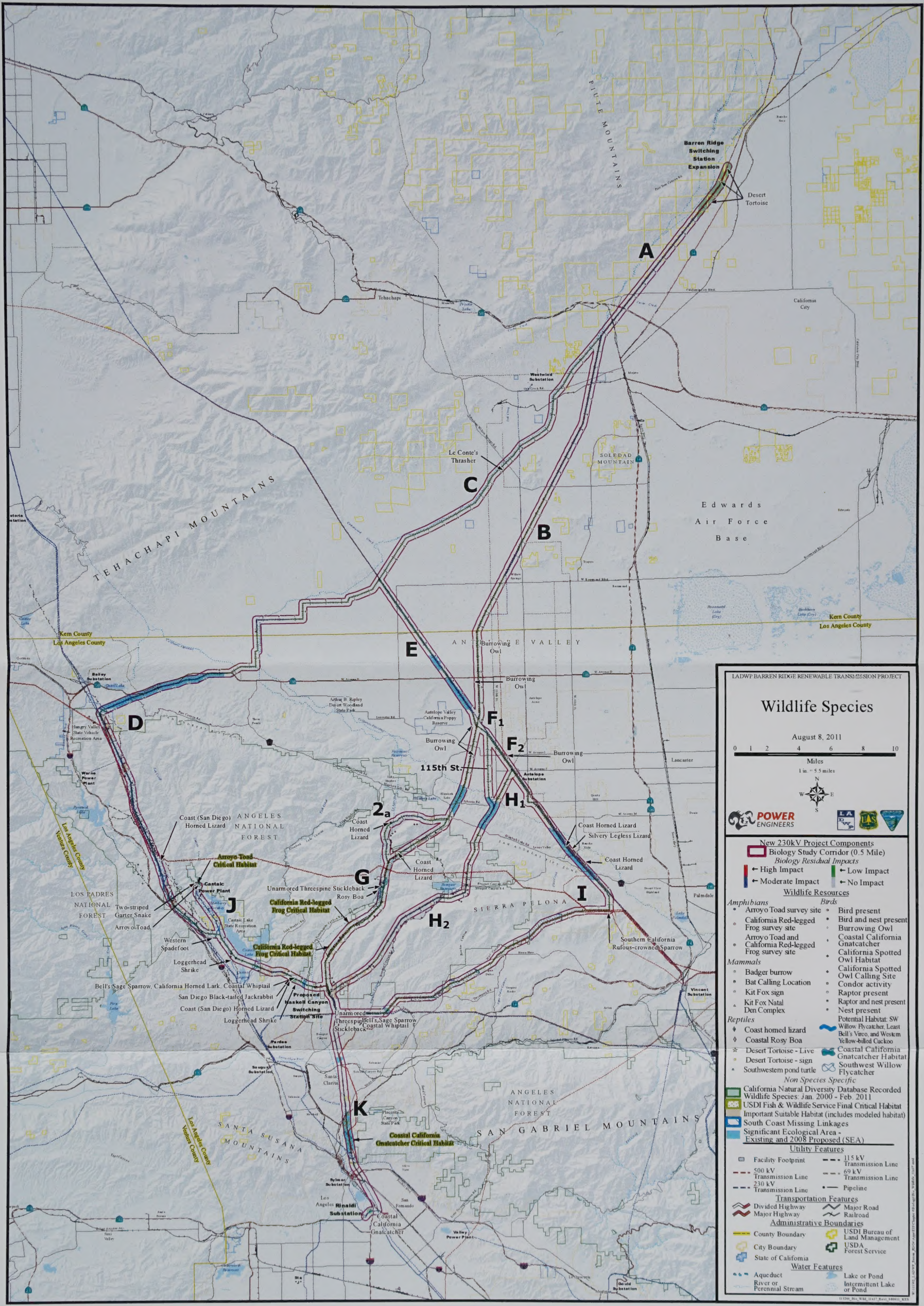
LADWP BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
Wildlife Species
August 8, 2011
0 1 2 4 6 8 10
Miles
1 in. = 5.5 miles
N
W
E
S
POWER ENGINEERS
LA DWP
US
New 230kV Project Components
Biology Study Corridor (0.5 Mile)
Biology Residual Impacts
← High Impact
← Low Impact
← Moderate Impact
← No Impact
Wildlife Resources
Amphibians
Arroyo Toad survey site
California Red-legged Frog survey site
Arroyo Toad and California Red-legged Frog survey site
Mammals
Badger burrow
Bat Calling Location
Kit Fox sign
Kit Fox Natal Den Complex
Reptiles
Coast horned lizard
Coastal Rosy Boa
Desert Tortoise - Live
Desert Tortoise - sign
Southwestern pond turtle
Birds
Bird present
Bird and nest present
Burrowing Owl
Coastal California Gnatcatcher
California Spotted Owl Habitat
California Spotted Owl Calling Site
Condor activity
Raptor present
Raptor and nest present
Nest present
Potential Habitat: SW Willow Flycatcher, Least Bell's Vireo, and Western Yellow-billed Cuckoo
Coastal California Gnatcatcher Habitat
Southwest Willow Flycatcher
Non Species Specific
California Natural Diversity Database Recorded Wildlife Species: Jan. 2000 - Feb. 2011
USDI Fish & Wildlife Service Final Critical Habitat
Important Suitable Habitat (includes modeled habitat)
South Coast Missing Linkages
Significant Ecological Area - Existing and 2008 Proposed (SEA)
Utility Features
Facility Footprint
115 kV Transmission Line
500 kV Transmission Line
69 kV Transmission Line
230 kV Transmission Line
Pipeline
Transportation Features
Divided Highway
Major Road
Major Highway
Railroad
Administrative Boundaries
County Boundary
USDI Bureau of Land Management
City Boundary
USDA Forest Service
State of California
Water Features
Aqueduct
Lake or Pond
River or Perennial Stream
Intermittent Lake or Pond
115244_Bio_Wild_11x17_Rev1_080911_KES
PIUTE MOUNTAINS
Barren Ridge Switching Station Expansion
Desert Tortoise
A
Tehachapi
California City
Westwind Substation
SOLEDAD MOUNTAIN
Le Conte's Thrasher
C
B
Edwards Air Force Base
TEHACHAPI MOUNTAINS
Kern County
Los Angeles County
ANTELOPE VALLEY
Burrowing Owl
E
Burrowing Owl
Bailey Substation
Quail Lake
D
Hungry Valley State Vehicle Recreation Area
Arthur B. Ripley Desert Woodland State Park
Antelope Valley California Poppy Reserve
F_1
F_2
Burrowing Owl
Burrowing Owl
115th St.
Antelope Substation
Lancaster
H_1
Warne Power Plant
2_a
Coast Horned Lizard
Coast Horned Lizard
Silvery Legless Lizard
Coast (San Diego) Horned Lizard
ANGELES NATIONAL FOREST
Coast Horned Lizard
Coast Horned Lizard
Arroyo Toad Critical Habitat
G
Unarmored Threespine Stickleback
Rosy Boa
Palmdale
I
LOS PADRES NATIONAL FOREST
Castaic Power Plant
J
California Red-legged Frog Critical Habitat
H_2
SIERRA PELONA
Two-striped Garter Snake
Arroyo Toad
Castaic Lake State Recreation Area
Southern California Rufous-crowned Sparrow
Western Spadefoot
California Red-legged Frog Critical Habitat
Loggerhead Shrike
Los Angeles County
Ventura County
Bell's Sage Sparrow, California Horned Lark, Coastal Whiptail
San Diego Black-tailed Jackrabbit
Coast (San Diego) Horned Lizard
Loggerhead Shrike
Proposed Haskell Canyon Switching Station Site
Unarmored Threespine Stickleback
Bell's Sage Sparrow
Coastal Whiptail
Vincent Substation
Pardee Substation
Saugus Substation
Santa Clarita
ANGELES NATIONAL FOREST
K
Placerita Canyon State Park
SANTA SUSANA MOUNTAINS
Coastal California Gnatcatcher Critical Habitat
SAN GABRIEL MOUNTAINS
Los Angeles County
Ventura County
Sylmar Substation
Los Angeles
Rinaldi Substation
San Fernando
Coastal California Gnatcatcher
Valley Power Plant
Gould Substation

Altadena

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APPENDIX B: MAPS OF SPECIAL-STATUS PLANT OCCURRENCES ON ANGELES NATIONAL FOREST (ANF) LANDS WITHIN THE BRRTP PROJECT AREA

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Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
I	31	31.1	3	74.5	74.6	None	None		SRS	None	RSS,	Maximum	H	H	M
I	31.1	31.2	3	74.6	74.7	None	None		SRS	None	RSS,	Maximum	H	H	M
I	31.2	31.3	3	74.7	74.8	None	None		SRS	None	RSS,	Maximum	H	H	M
I	31.3	31.4	3	74.8	74.9	None	None		SRS	None	RSS,	Maximum	H	H	M
I	31.4	31.5	3	74.9	75	None	None		SRS	None	RSS,	Maximum	H	H	M
I	31.5	31.6	3	75	75.1	None	None		SRS, SSARW	None	RSS,	Maximum	H	H	M
I	31.6	31.7	3	75.1	75.2	None	None		SRS, SSARW	None	RSS,	Maximum	H	H	M
I	31.7	31.8	3	75.2	75.3	None	None		SSARW	None	RSS,	Maximum	H	H	M
I	31.8	31.9	3	75.3	75.4	None	None		SSARW	None	RSS,	Maximum	H	H	M
I	31.9	32	3	75.4	75.5	None	None		SSARW	None	RSS,	Maximum	H	H	M
I	32	32.1	3	75.5	75.6	None	None		SSARW	None	RSS,	Maximum	H	H	M
I	32.1	32.2	3	75.6	75.7	None	None		SSARW	None	RSS,	Maximum	H	H	M

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
I	20.6	20.7	3	64.1	64.2	None	None		None	None	DD,	Minimal	M	M	L
I	20.7	20.8	3	64.2	64.3	None	None		None	None	DD,	Minimal	M	M	L
I	20.8	20.9	3	64.3	64.4	None	None		None	None	DD,SMC,	Moderate	H	H	L
I	20.9	21	3	64.4	64.5	None	None		None	None	DD,SMC,	Moderate	H	H	L
I	21	21.1	3	64.5	64.6	None	None		None	None	SMC,	Moderate	H	H	L
I	21.1	21.2	3	64.6	64.7	None	None		None	None	SMC,	Moderate	H	H	L
I	21.2	21.3	3	64.7	64.8	None	None		None	None	SMC,	Moderate	H	H	L
I	21.3	21.4	3	64.8	64.9	None	None		None	None	SMC,	Moderate	H	H	L
I	21.4	21.5	3	64.9	65	None	None		None	None	SMC,	Moderate	H	H	L
I	21.5	21.6	3	65	65.1	None	None		None	None	SMC,	Moderate	H	H	L
I	21.6	21.7	3	65.1	65.2	None	None		None	None	SMC,	Moderate	H	H	L
I	21.7	21.8	3	65.2	65.3	None	None		None	None	SMC,	Moderate	H	H	L
I	21.8	21.9	3	65.3	65.4	None	None		None	None	SMC,	Moderate	H	H	L
I	21.9	22	3	65.4	65.5	None	None		None	None	SMC,	Moderate	H	H	L
I	22	22.1	3	65.5	65.6	None	None		None	None	SMC,	Moderate	H	H	L
I	22.1	22.2	3	65.6	65.7	None	None		None	None	SMC,	Moderate	H	H	L
I	22.2	22.3	3	65.7	65.8	None	None		None	None	SMC,	Moderate	H	H	L
I	22.3	22.4	3	65.8	65.9	None	None		None	None	SMC,	Moderate	H	H	L
I	22.4	22.5	3	65.9	66	None	None		None	None	SMC,	Moderate	H	H	L
I	22.5	22.6	3	66	66.1	None	None		None	None	SMC,	Moderate	H	H	L
I	22.6	22.7	3	66.1	66.2	None	None		None	None	CC,SMC,	Moderate	H	H	L
I	22.7	22.8	3	66.2	66.3	None	None		None	None	CC,SMC,	Moderate	H	H	L
I	22.8	22.9	3	66.3	66.4	None	None		None	None	CC,	Moderate	H	H	L
I	22.9	23	3	66.4	66.5	None	None		None	None	CC,	Moderate	H	H	L
I	23	23.1	3	66.5	66.6	None	None		None	None	CC,	Moderate	H	H	L
I	23.1	23.2	3	66.6	66.7	None	None		None	None	CC,	Moderate	H	H	L
I	23.2	23.3	3	66.7	66.8	None	None		None	None	CC, RSS,	Maximum	H	H	L
I	23.3	23.4	3	66.8	66.9	None	None		None	None	CC, RSS,	Maximum	H	H	L
I	23.4	23.5	3	66.9	67	None	None		None	None	RSS,	Maximum	H	H	L
I	23.5	23.6	3	67	67.1	None	None		None	None	RSS,	Maximum	H	H	L
I	23.6	23.7	3	67.1	67.2	None	None		None	None	RSS,	Maximum	H	H	L
I	23.7	23.8	3	67.2	67.3	None	None		None	None	RSS,	Maximum	H	H	L
I	23.8	23.9	3	67.3	67.4	None	Maximum		None	None	RSS,	Maximum	H	H	M
I	23.9	24	3	67.4	67.5	None	None		None	None	RSS,	Maximum	H	H	L
I	24	24.1	3	67.5	67.6	None	None		None	None	RSS,	Maximum	H	H	L
I	24.1	24.2	3	67.6	67.7	None	None		None	None	RSS,	Maximum	H	H	L
I	24.2	24.3	3	67.7	67.8	None	None		None	None	RSS,	Maximum	H	H	L
I	24.3	24.4	3	67.8	67.9	None	None		None	None	RSS,	Maximum	H	H	L
I	24.4	24.5	3	67.9	68	None	None		None	None	RSS,	Maximum	H	H	L
I	24.5	24.6	3	68	68.1	None	None		None	None	RSS, SOC,	Maximum	H	H	L
I	24.6	24.7	3	68.1	68.2	None	None		None	None	RSS, SOC,	Maximum	H	H	L
I	24.7	24.8	3	68.2	68.3	None	None		None	None	SOC,	Moderate	H	H	L
I	24.8	24.9	3	68.3	68.4	None	None		None	None	SOC,	Moderate	H	H	L
I	24.9	25	3	68.4	68.5	None	None		None	None	SOC,	Moderate	H	H	L
I	25	25.1	3	68.5	68.6	None	None		None	None	SOC,	Moderate	H	H	L
I	25.1	25.2	3	68.6	68.7	None	None		None	None	SOC,	Moderate	H	H	L
I	25.2	25.3	3	68.7	68.8	None	None		None	None	SOC,	Moderate	H	H	L
I	25.3	25.4	3	68.8	68.9	None	None		None	None	SOC,	Moderate	H	H	L
I	25.4	25.5	3	68.9	69	None	None		None	None	SOC,	Moderate	H	H	L
I	25.5	25.6	3	69	69.1	None	None		None	None	SOC,	Moderate	H	H	L
I	25.6	25.7	3	69.1	69.2	None	None		SRS	None	SOC,	Maximum	H	H	M
I	25.7	25.8	3	69.2	69.3	None	None		SRS	None	RSS, SOC,	Maximum	H	H	M

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
I	25.8	25.9	3	69.3	69.4	None	None		SRS	None	RSS, SOC,	Maximum	H	H	M
I	25.9	26	3	69.4	69.5	None	None		SRS	None	RSS, SOC,	Maximum	H	H	M
I	26	26.1	3	69.5	69.6	None	None		SRS	None	RSS, SOC,	Maximum	H	H	L
I	26.1	26.2	3	69.6	69.7	None	None		None	None	RSS, SOC,	Maximum	H	H	L
I	26.2	26.3	3	69.7	69.8	None	None		None	None	RSS, SOC,	Maximum	H	H	L
I	26.3	26.4	3	69.8	69.9	None	None		None	None	RSS,	Maximum	H	H	L
I	26.4	26.5	3	69.9	70	None	None		None	None	RSS,	Maximum	H	H	L
I	26.5	26.6	3	70	70.1	None	None		SRS	None	RSS,	Maximum	H	H	M
I	26.6	26.7	3	70.1	70.2	None	None		SRS	None	RSS,	Maximum	H	H	M
I	26.7	26.8	3	70.2	70.3	None	None		None	None	RSS,	Maximum	H	H	L
I	26.8	26.9	3	70.3	70.4	None	None		None	None	RSS,	Maximum	H	H	L
I	26.9	27	3	70.4	70.5	None	None		None	None	RSS,	Maximum	H	H	L
I	27	27.1	3	70.5	70.6	None	None		None	None	RSS,	Maximum	H	H	L
I	27.1	27.2	3	70.6	70.7	None	None		None	None	RSS,	Maximum	H	H	L
I	27.2	27.3	3	70.7	70.8	None	None		None	None	RSS,	Maximum	H	H	L
I	27.3	27.4	3	70.8	70.9	None	None		None	None	RSS,	Maximum	H	H	L
I	27.4	27.5	3	70.9	71	None	None		None	None	RSS,	Maximum	H	H	L
I	27.5	27.6	3	71	71.1	None	None		None	None	RSS,	Maximum	H	H	L
I	27.6	27.7	3	71.1	71.2	None	None		None	None	RSS,	Maximum	H	H	L
I	27.7	27.8	3	71.2	71.3	None	None		None	None	RSS,	Maximum	H	H	L
I	27.8	27.9	3	71.3	71.4	None	None		None	None	RSS,	Maximum	H	H	L
I	27.9	28	3	71.4	71.5	None	None		None	None	RSS,	Maximum	H	H	L
I	28	28.1	3	71.5	71.6	None	None		None	None	RSS,	Maximum	H	H	L
I	28.1	28.2	3	71.6	71.7	None	None		None	None	RSS,	Maximum	H	H	L
I	28.2	28.3	3	71.7	71.8	None	None		None	None	RSS,	Maximum	H	H	L
I	28.3	28.4	3	71.8	71.9	None	None		None	None	RSS,	Maximum	H	H	L
I	28.4	28.5	3	71.9	72	None	None		None	None	RSS,	Maximum	H	H	L
I	28.5	28.6	3	72	72.1	None	None		None	None	RSS,	Maximum	H	H	L
I	28.6	28.7	3	72.1	72.2	None	None		SRS	None	RSS,	Maximum	H	H	M
I	28.7	28.8	3	72.2	72.3	None	None		SRS	None	RSS,	Maximum	H	H	M
I	28.8	28.9	3	72.3	72.4	None	None		SRS	None	RSS,	Maximum	H	H	M
I	28.9	29	3	72.4	72.5	None	None		None	None	RSS,	Maximum	H	H	L
I	29	29.1	3	72.5	72.6	None	None		None	None	RSS,	Maximum	H	H	L
I	29.1	29.2	3	72.6	72.7	None	None		None	None	RSS,	Maximum	H	H	L
I	29.2	29.3	3	72.7	72.8	None	None		None	None	RSS,	Maximum	H	H	L
I	29.3	29.4	3	72.8	72.9	None	None		None	None	RSS,	Maximum	H	H	L
I	29.4	29.5	3	72.9	73	None	None		None	None	CC,RSS,	Maximum	H	H	L
I	29.5	29.6	3	73	73.1	None	None		None	None	CC,RSS,	Maximum	H	H	L
I	29.6	29.7	3	73.1	73.2	None	None		SRS	None	CC,	Maximum	H	H	M
I	29.7	29.8	3	73.2	73.3	None	None		SRS	None	CC,	Maximum	H	H	M
I	29.8	29.9	3	73.3	73.4	None	None		None	None	CC,	Moderate	M	M	L
I	29.9	30	3	73.4	73.5	None	None		None	None	CC,	Moderate	M	M	L
I	30	30.1	3	73.5	73.6	None	None		None	None	CC,	Moderate	M	M	L
I	30.1	30.2	3	73.6	73.7	None	None		None	None	CC,	Moderate	M	M	L
I	30.2	30.3	3	73.7	73.8	None	None		None	None	CC,	Moderate	M	M	L
I	30.3	30.4	3	73.8	73.9	None	None		None	None	CC,	Moderate	M	M	L
I	30.4	30.5	3	73.9	74	None	None		None	None	CC,	Moderate	M	M	L
I	30.5	30.6	3	74	74.1	None	None		None	None	CC,	Moderate	M	M	L
I	30.6	30.7	3	74.1	74.2	None	None		None	None	CC,	Moderate	M	M	L
I	30.7	30.8	3	74.2	74.3	None	None		None	None	CC,RSS,	Maximum	H	H	L
I	30.8	30.9	3	74.3	74.4	None	None		SRS	None	CC,RSS,	Maximum	H	H	M
I	30.9	31	3	74.4	74.5	None	None		None	None	CC,RSS,	Maximum	H	H	L

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
I	10.2	10.3	3	53.7	53.8	None	None		None	None	RSS,SMC,	Maximum	H	H	L
I	10.3	10.4	3	53.8	53.9	None	None		None	None	SMC,	Moderate	H	H	L
I	10.4	10.5	3	53.9	54	None	None		None	None	SMC,	Moderate	H	H	L
I	10.5	10.6	3	54	54.1	None	None		None	None	SMC,	Moderate	H	H	L
I	10.6	10.7	3	54.1	54.2	None	None		None	None	RSS,SMC,	Maximum	H	H	L
I	10.7	10.8	3	54.2	54.3	None	None		None	None	RSS,	Maximum	H	H	L
I	10.8	10.9	3	54.3	54.4	None	None		None	None	RSS,	Maximum	H	H	L
I	10.9	11	3	54.4	54.5	None	None		None	None	RSS,	Maximum	H	H	L
I	11	11.1	3	54.5	54.6	None	None		None	None	RSS,	Maximum	H	H	L
I	11.1	11.2	3	54.6	54.7	None	None		None	None	RSS,	Maximum	H	H	L
I	11.2	11.3	3	54.7	54.8	None	None		None	None	RSS,	Maximum	H	H	L
I	11.3	11.4	3	54.8	54.9	None	None		None	None	RSS,	Maximum	H	H	L
I	11.4	11.5	3	54.9	55	None	None		None	None	RSS,SOC,	Maximum	H	H	L
I	11.5	11.6	3	55	55.1	None	None		None	None	SOC,	Moderate	H	H	L
I	11.6	11.7	3	55.1	55.2	None	None		None	None	SOC,	Moderate	H	H	L
I	11.7	11.8	3	55.2	55.3	None	None		None	None	SOC,	Moderate	H	H	L
I	11.8	11.9	3	55.3	55.4	None	None		None	None	SOC,	Moderate	H	H	L
I	11.9	12	3	55.4	55.5	None	None		None	None	SOC,	Moderate	H	H	L
I	12	12.1	3	55.5	55.6	None	None		None	None	SOC,	Moderate	H	H	L
I	12.1	12.2	3	55.6	55.7	None	None		None	None	SOC,	Moderate	H	H	L
I	12.2	12.3	3	55.7	55.8	None	None		None	None	SOC,	Moderate	H	H	L
I	12.3	12.4	3	55.8	55.9	None	None		None	None	SOC,	Moderate	H	H	L
I	12.4	12.5	3	55.9	56	None	None		None	None	SOC,	Moderate	H	H	L
I	12.5	12.6	3	56	56.1	None	None		None	None	SOC,	Moderate	H	H	L
I	12.6	12.7	3	56.1	56.2	None	None		None	None	SOC,	Moderate	H	H	L
I	12.7	12.8	3	56.2	56.3	None	None		None	None	SOC,	Moderate	H	H	L
I	12.8	12.9	3	56.3	56.4	None	None		None	None	RSS,SOC,	Maximum	H	H	L
I	12.9	13	3	56.4	56.5	None	None		None	None	RSS,SOC,	Maximum	H	H	L
I	13	13.1	3	56.5	56.6	None	None		None	None	RSS,	Maximum	H	H	L
I	13.1	13.2	3	56.6	56.7	None	None		None	None	RSS,	Maximum	H	H	L
I	13.2	13.3	3	56.7	56.8	None	None		None	None	RSS,	Maximum	H	H	L
I	13.3	13.4	3	56.8	56.9	None	None		None	None	RSS,	Maximum	H	H	L
I	13.4	13.5	3	56.9	57	None	None		None	None	RSS,	Maximum	H	H	L
I	13.5	13.6	3	57	57.1	None	None		None	None	RSS,SOC,	Maximum	H	H	L
I	13.6	13.7	3	57.1	57.2	None	None		None	None	SOC,	Moderate	H	H	L
I	13.7	13.8	3	57.2	57.3	None	None		None	None	SOC,	Moderate	H	H	L
I	13.8	13.9	3	57.3	57.4	None	None		None	None	SOC,	Moderate	H	H	L
I	13.9	14	3	57.4	57.5	None	None		None	None	SOC,	Moderate	H	H	L
I	14	14.1	3	57.5	57.6	None	None		None	None	SOC,	Moderate	H	H	L
I	14.1	14.2	3	57.6	57.7	None	None		None	None	SOC,	Moderate	H	H	L
I	14.2	14.3	3	57.7	57.8	None	None		None	None	SOC,	Moderate	H	H	L
I	14.3	14.4	3	57.8	57.9	None	None		None	None	RSS,SOC,	Maximum	H	H	L
I	14.4	14.5	3	57.9	58	None	None		None	None	RSS,	Maximum	H	H	L
I	14.5	14.6	3	58	58.1	None	None		None	None	RSS,	Maximum	H	H	L
I	14.6	14.7	3	58.1	58.2	None	None		None	None	RSS,	Maximum	H	H	L
I	14.7	14.8	3	58.2	58.3	None	None		None	None	RSS,	Maximum	H	H	L
I	14.8	14.9	3	58.3	58.4	None	None		None	None	RSS,	Maximum	H	H	L
I	14.9	15	3	58.4	58.5	None	None		None	None	RSS,	Maximum	H	H	L
I	15	15.1	3	58.5	58.6	None	None		None	None	RSS,	Maximum	H	H	L
I	15.1	15.2	3	58.6	58.7	None	None		None	None	RSS,	Maximum	H	H	L
I	15.2	15.3	3	58.7	58.8	None	None		None	None	RSS,	Maximum	H	H	L
I	15.3	15.4	3	58.8	58.9	None	None		None	None	RSS,	Maximum	H	H	L

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
I	15.4	15.5	3	58.9	59	None	None		None	None	RSS,	Maximum	H	H	L
I	15.5	15.6	3	59	59.1	None	None		None	None	RSS,	Maximum	H	H	L
I	15.6	15.7	3	59.1	59.2	None	None		None	None	RSS,	Maximum	H	H	L
I	15.7	15.8	3	59.2	59.3	None	None		None	None	RSS,	Maximum	H	H	L
I	15.8	15.9	3	59.3	59.4	None	None		None	None	RSS,	Maximum	H	H	L
I	15.9	16	3	59.4	59.5	None	None		None	None	RSS,	Maximum	H	H	L
I	16	16.1	3	59.5	59.6	None	None		None	None	RSS,	Maximum	H	H	L
I	16.1	16.2	3	59.6	59.7	None	None		None	None	RSS,	Maximum	H	H	L
I	16.2	16.3	3	59.7	59.8	None	None		None	None	RSS,	Maximum	H	H	L
I	16.3	16.4	3	59.8	59.9	None	None		None	None	RSS,	Maximum	H	H	L
I	16.4	16.5	3	59.9	60	None	None		None	None	RSS,	Maximum	H	H	L
I	16.5	16.6	3	60	60.1	None	None		None	None	RSS,	Maximum	H	H	L
I	16.6	16.7	3	60.1	60.2	None	None		None	None	RSS,	Maximum	H	H	L
I	16.7	16.8	3	60.2	60.3	None	None		None	None	RSS,	Maximum	H	H	L
I	16.8	16.9	3	60.3	60.4	None	None		None	None	RSS,	Maximum	H	H	L
I	16.9	17	3	60.4	60.5	None	None		None	None	RSS,	Maximum	H	H	L
I	17	17.1	3	60.5	60.6	None	Maximum		None	None	RSS,	Maximum	H	H	L
I	17.1	17.2	3	60.6	60.7	None	Maximum		None	None	RSS,	Maximum	H	H	L
I	17.2	17.3	3	60.7	60.8	None	Maximum		None	None	RSS,	Maximum	H	H	H
I	17.3	17.4	3	60.8	60.9	None	Maximum		None	None	RSS,	Maximum	H	H	H
I	17.4	17.5	3	60.9	61	None	None		None	None	RSS,	Maximum	H	H	L
I	17.5	17.6	3	61	61.1	None	Maximum		None	None	RSS,	Maximum	H	H	L
I	17.6	17.7	3	61.1	61.2	None	Maximum		None	None	RSS,	Maximum	H	H	L
I	17.7	17.8	3	61.2	61.3	None	Maximum		None	None	RSS,	Maximum	H	H	L
I	17.8	17.9	3	61.3	61.4	None	None		None	None	RSS,	Maximum	H	H	L
I	17.9	18	3	61.4	61.5	None	None		None	None	RSS,	Maximum	H	H	L
I	18	18.1	3	61.5	61.6	None	Maximum		None	None	RSS,	Maximum	H	H	L
I	18.1	18.2	3	61.6	61.7	None	Maximum		None	None	DD,RSS,	Maximum	H	H	L
I	18.2	18.3	3	61.7	61.8	None	Maximum		None	None	DD,RSS,	Maximum	H	H	L
I	18.3	18.4	3	61.8	61.9	None	Maximum		None	None	DD,RSS,	Maximum	H	H	L
I	18.4	18.5	3	61.9	62	None	Maximum		None	None	DD,	Maximum	H	H	L
I	18.5	18.6	3	62	62.1	None	None		None	None	DD,	Maximum	H	H	L
I	18.6	18.7	3	62.1	62.2	None	None		None	None	DD,	Maximum	H	H	L
I	18.7	18.8	3	62.2	62.3	None	None		None	None	DD,	Maximum	H	H	L
I	18.8	18.9	3	62.3	62.4	None	None		None	None	DD,RSS,	Maximum	H	H	L
I	18.9	19	3	62.4	62.5	None	None		None	None	DD,RSS,	Maximum	H	H	L
I	19	19.1	3	62.5	62.6	None	None		None	None	DD, RSS	Maximum	H	H	L
I	19.1	19.2	3	62.6	62.7	None	None		None	None	DD,	Maximum	H	H	L
I	19.2	19.3	3	62.7	62.8	None	None		None	None	DD,	Minimal	M	M	L
I	19.3	19.4	3	62.8	62.9	None	None		None	None	DD,	Minimal	M	M	L
I	19.4	19.5	3	62.9	63	None	None		None	None	DD,	Minimal	M	M	L
I	19.5	19.6	3	63	63.1	None	None		None	None	DD,	Minimal	M	M	L
I	19.6	19.7	3	63.1	63.2	None	None		None	None	DD,	Minimal	M	M	L
I	19.7	19.8	3	63.2	63.3	None	None		None	None	DD,	Minimal	M	M	L
I	19.8	19.9	3	63.3	63.4	None	None		None	None	DD,	Minimal	M	M	L
I	19.9	20	3	63.4	63.5	None	None		None	None	DD,	Minimal	M	M	L
I	20	20.1	3	63.5	63.6	None	None		None	None	DD,	Minimal	M	M	L
I	20.1	20.2	3	63.6	63.7	None	None		None	None	DD,	Minimal	M	M	L
I	20.2	20.3	3	63.7	63.8	None	None		None	None	DD,	Minimal	M	M	L
I	20.3	20.4	3	63.8	63.9	None	None		None	None	DD,	Minimal	M	M	L
I	20.4	20.5	3	63.9	64	None	None		None	None	DD,	Minimal	M	M	L
I	20.5	20.6	3	64	64.1	None	None		None	None	DD,	Minimal	M	M	L

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
H2	16.9	17	None			None	None		None	None	RSS,	Maximum	H	H	L
H2	17	17.1	None			None	None		None	None	RSS,	Maximum	H	H	M
I	0	0.1	3	43.5	43.6	None	None		None	None	AnGr,	Moderate	M	M	L
I	0.1	0.2	3	43.6	43.7	None	None		None	None	AnGr,	Moderate	M	M	L
I	0.2	0.3	3	43.7	43.8	None	None		None	None	AnGr,	Moderate	M	M	L
I	0.3	0.4	3	43.8	43.9	None	None		None	None	AnGr,	Moderate	M	M	L
I	0.4	0.5	3	43.9	44	None	None		None	None	AnGr,	Moderate	M	M	L
I	0.5	0.6	3	44	44.1	None	None		None	None	AnGr,	Moderate	M	M	L
I	0.6	0.7	3	44.1	44.2	None	None		None	None	AnGr,	Moderate	M	M	L
I	0.7	0.8	3	44.2	44.3	None	None		None	None	AnGr,	Moderate	M	M	L
I	0.8	0.9	3	44.3	44.4	None	None		None	None	AnGr,	Moderate	M	M	L
I	0.9	1	3	44.4	44.5	None	None		None	None	AnGr,	Moderate	M	M	L
I	1	1.1	3	44.5	44.6	None	None		None	None	AnGr,	Moderate	M	M	L
I	1.1	1.2	3	44.6	44.7	None	None		None	None	AnGr,	Moderate	M	M	L
I	1.2	1.3	3	44.7	44.8	None	None		None	None	AnGr,	Moderate	M	M	L
I	1.3	1.4	3	44.8	44.9	None	None		None	None	AnGr,	Moderate	M	M	L
I	1.4	1.5	3	44.9	45	None	None		None	None	AnGr,	Moderate	M	M	L
I	1.5	1.6	3	45	45.1	None	None		None	None	AnGr,	Moderate	M	M	L
I	1.6	1.7	3	45.1	45.2	None	None		None	None	AnGr,	Moderate	M	M	L
I	1.7	1.8	3	45.2	45.3	None	None		None	None	AnGr,	Moderate	M	M	L
I	1.8	1.9	3	45.3	45.4	None	None		None	None	AnGr,	Moderate	M	M	L
I	1.9	2	3	45.4	45.5	None	None		None	None	AnGr,	Moderate	M	M	L
I	2	2.1	3	45.5	45.6	None	None		None	None	AnGr,	Moderate	M	M	L
I	2.1	2.2	3	45.6	45.7	None	None		None	None	AnGr,	Moderate	M	M	L
I	2.2	2.3	3	45.7	45.8	None	None		None	None	AnGr,	Moderate	M	M	L
I	2.3	2.4	3	45.8	45.9	None	None		None	None	AnGr,	Moderate	M	M	L
I	2.4	2.5	3	45.9	46	None	None		None	None	AnGr,	Moderate	M	M	L
I	2.5	2.6	3	46	46.1	None	None		None	None	AnGr,	Moderate	M	M	L
I	2.6	2.7	3	46.1	46.2	None	None		None	None	AnGr,	Moderate	M	M	L
I	2.7	2.8	3	46.2	46.3	None	None		None	None	AnGr,	Moderate	M	M	L
I	2.8	2.9	3	46.3	46.4	None	None		None	None	AnGr,	Moderate	M	M	L
I	2.9	3	3	46.4	46.5	None	None		None	None	AnGr,	Moderate	M	M	L
I	3	3.1	3	46.5	46.6	None	None		None	None	AnGr,	Moderate	M	M	L
I	3.1	3.2	3	46.6	46.7	None	None		None	None	AnGr,	Moderate	M	M	L
I	3.2	3.3	3	46.7	46.8	None	None		None	None	AnGr,	Moderate	M	M	L
I	3.3	3.4	3	46.8	46.9	None	None		None	None	AnGr,	Moderate	M	M	L
I	3.4	3.5	3	46.9	47	None	None		None	None	AnGr,	Moderate	M	M	L
I	3.5	3.6	3	47	47.1	None	None		None	None	AnGr,	Moderate	M	M	L
I	3.6	3.7	3	47.1	47.2	None	None		None	None	AnGr,	Moderate	M	M	L
I	3.7	3.8	3	47.2	47.3	None	None		None	None	AnGr,	Moderate	M	M	L
I	3.8	3.9	3	47.3	47.4	None	None		None	None	AnGr,	Moderate	M	M	L
I	3.9	4	3	47.4	47.5	None	None		None	None	AnGr,	Moderate	M	M	L
I	4	4.1	3	47.5	47.6	None	None		None	None	AnGr,	Moderate	M	M	L
I	4.1	4.2	3	47.6	47.7	None	None		None	None	AnGr,	Moderate	M	M	L
I	4.2	4.3	3	47.7	47.8	None	None		None	None	AnGr,	Moderate	M	M	L
I	4.3	4.4	3	47.8	47.9	None	None		None	None	AnGr,	Moderate	M	M	L
I	4.4	4.5	3	47.9	48	None	None		None	None	AnGr,	Moderate	M	M	L
I	4.5	4.6	3	48	48.1	None	None		None	None	AnGr,	Moderate	M	M	L
I	4.6	4.7	3	48.1	48.2	None	None		None	None	AnGr,	Moderate	M	M	L
I	4.7	4.8	3	48.2	48.3	None	None		None	None	AnGr,	Moderate	M	M	L
I	4.8	4.9	3	48.3	48.4	None	None		None	None	AnGr,	Moderate	M	M	L
I	4.9	5	3	48.4	48.5	None	None		None	San Andreas Rift Zone SEA	AnGr,	Maximum	H	H	M

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
I	5	5.1	3	48.5	48.6	None	None		None	San Andreas Rift Zone SEA	AnGr,	Maximum	H	H	M
I	5.1	5.2	3	48.6	48.7	None	None		None	San Andreas Rift Zone SEA	AnGr,SOC,	Moderate	M	H	M
I	5.2	5.3	3	48.7	48.8	None	None		None	San Andreas Rift Zone SEA	AnGr,SOC,	Moderate	M	H	M
I	5.3	5.4	3	48.8	48.9	None	None		None	San Andreas Rift Zone SEA	SOC,	Moderate	M	H	M
I	5.4	5.5	3	48.9	49	None	None		None	San Andreas Rift Zone SEA	SOC,	Moderate	M	H	M
I	5.5	5.6	3	49	49.1	None	None		None	San Andreas Rift Zone SEA	SOC,	Moderate	M	H	M
I	5.6	5.7	3	49.1	49.2	None	None		None	San Andreas Rift Zone SEA	SOC,	Moderate	M	H	M
I	5.7	5.8	3	49.2	49.3	None	None		None	San Andreas Rift Zone SEA	RSS,SOC,	Maximum	H	H	M
I	5.8	5.9	3	49.3	49.4	None	None		None	San Andreas Rift Zone SEA	RSS,SOC,	Maximum	H	H	M
I	5.9	6	3	49.4	49.5	None	None		None	San Andreas Rift Zone SEA	RSS,SOC,	Maximum	H	H	M
I	6	6.1	3	49.5	49.6	None	None		None	San Andreas Rift Zone SEA	RSS,SOC,	Maximum	H	H	M
I	6.1	6.2	3	49.6	49.7	None	None	NI	None	San Andreas Rift Zone SEA	RSS,	Maximum	H	H	M
I	6.2	6.3	3	49.7	49.8	None	None	NI	None	San Andreas Rift Zone SEA	RSS,	Maximum	H	H	M
I	6.3	6.4	3	49.8	49.9	None	None	NI	None	San Andreas Rift Zone SEA	RSS,	Maximum	H	H	M
I	6.4	6.5	3	49.9	50	None	None		None	San Andreas Rift Zone SEA	RSS,	Maximum	H	H	M
I	6.5	6.6	3	50	50.1	None	None		None	San Andreas Rift Zone SEA	RSS,	Maximum	H	H	M
I	6.6	6.7	3	50.1	50.2	None	None		None	San Andreas Rift Zone SEA	RSS,	Maximum	H	H	M
I	6.7	6.8	3	50.2	50.3	None	None		None	San Andreas Rift Zone SEA	RSS,SMC,	Maximum	H	H	M
I	6.8	6.9	3	50.3	50.4	None	None		None	San Andreas Rift Zone SEA	SMC,	Moderate	M	H	M
I	6.9	7	3	50.4	50.5	None	None		None	San Andreas Rift Zone SEA	SOC,SMC,	Moderate	M	H	M
I	7	7.1	3	50.5	50.6	None	None		None	San Andreas Rift Zone SEA	SOC,SMC,	Moderate	M	H	M
I	7.1	7.2	3	50.6	50.7	None	None		None	San Andreas Rift Zone SEA	SOC,	Moderate	M	H	M
I	7.2	7.3	3	50.7	50.8	None	None		None	San Andreas Rift Zone SEA	SOC,	Moderate	M	H	M
I	7.3	7.4	3	50.8	50.9	None	None		None	San Andreas Rift Zone SEA	SOC,	Moderate	M	H	M
I	7.4	7.5	3	50.9	51	None	None		None	San Andreas Rift Zone SEA	SOC,	Moderate	M	H	M
I	7.5	7.6	3	51	51.1	None	None		None	San Andreas Rift Zone SEA	SOC,	Moderate	M	H	M
I	7.6	7.7	3	51.1	51.2	None	None		None	San Andreas Rift Zone SEA	DD,SOC,	Moderate	M	H	M
I	7.7	7.8	3	51.2	51.3	None	None		None	San Andreas Rift Zone SEA	DD,SOC,	Moderate	M	H	M
I	7.8	7.9	3	51.3	51.4	None	None		None	San Andreas Rift Zone SEA	DD,	Minimal	L	H	M
I	7.9	8	3	51.4	51.5	None	None		None	San Andreas Rift Zone SEA	DD,	Minimal	L	H	M
I	8	8.1	3	51.5	51.6	None	None		None	San Andreas Rift Zone SEA	DD,SOC,	Moderate	M	H	M
I	8.1	8.2	3	51.6	51.7	None	None		None	San Andreas Rift Zone SEA	DD,	Minimal	L	H	M
I	8.2	8.3	3	51.7	51.8	None	None		None	San Andreas Rift Zone SEA	DD,SMC,	Moderate	M	H	M
I	8.3	8.4	3	51.8	51.9	None	None		None	San Andreas Rift Zone SEA	DD,SMC,	Moderate	H	H	M
I	8.4	8.5	3	51.9	52	None	None		None	San Andreas Rift Zone SEA	SMC,	Moderate	H	H	M
I	8.5	8.6	3	52	52.1	None	None		None	San Andreas Rift Zone SEA	SMC,	Moderate	H	H	M
I	8.6	8.7	3	52.1	52.2	None	None		None	San Andreas Rift Zone SEA	SMC,	Moderate	H	H	M
I	8.7	8.8	3	52.2	52.3	None	None		None	San Andreas Rift Zone SEA	SMC,	Moderate	H	H	M
I	8.8	8.9	3	52.3	52.4	None	None		None	San Andreas Rift Zone SEA	RSS,SMC,	Maximum	H	H	M
I	8.9	9	3	52.4	52.5	None	None		None	San Andreas Rift Zone SEA	RSS,	Maximum	H	H	M
I	9	9.1	3	52.5	52.6	None	None		None	San Andreas Rift Zone SEA	RSS,	Maximum	H	H	M
I	9.1	9.2	3	52.6	52.7	None	None		None	San Andreas Rift Zone SEA	RSS,	Maximum	H	H	M
I	9.2	9.3	3	52.7	52.8	None	None		None	None	RSS,	Maximum	H	H	L
I	9.3	9.4	3	52.8	52.9	None	None		None	None	RSS,	Maximum	H	H	L
I	9.4	9.5	3	52.9	53	None	None		None	None	RSS,	Maximum	H	H	L
I	9.5	9.6	3	53	53.1	None	None		None	None	RSS,	Maximum	H	H	L
I	9.6	9.7	3	53.1	53.2	None	None		None	None	RSS,	Maximum	H	H	L
I	9.7	9.8	3	53.2	53.3	None	None		None	None	RSS,	Maximum	H	H	L
I	9.8	9.9	3	53.3	53.4	None	None		None	None	RSS,	Maximum	H	H	L
I	9.9	10	3	53.4	53.5	None	None		None	None	RSS,	Maximum	H	H	L
I	10	10.1	3	53.5	53.6	None	None		None	None	RSS,	Maximum	H	H	L
I	10.1	10.2	3	53.6	53.7	None	None		None	None	RSS,SMC,	Maximum	H	H	L

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
H2	6.5	6.6	None			None	None		None	None	SMC,	Moderate	M	H	M
H2	6.6	6.7	None			None	None		None	None	SMC,	Moderate	M	H	M
H2	6.7	6.8	None			None	None		None	None	SMC,	Moderate	M	M	L
H2	6.8	6.9	None			None	None		None	None	SMC,	Moderate	M	M	L
H2	6.9	7	None			None	None		None	None	SMC,	Moderate	M	M	L
H2	7	7.1	None			None	None		None	None	SMC,	Moderate	M	M	L
H2	7.1	7.2	None			None	None		None	None	SMC,	Moderate	M	M	L
H2	7.2	7.3	None			None	Maximum		None	None	SMC,	Moderate	M	H	M
H2	7.3	7.4	None			None	None		None	None	CC,SMC,	Moderate	M	M	M
H2	7.4	7.5	None			None	None		SCWRF	None	CC,SMC,	Maximum	H	H	M
H2	7.5	7.6	None			None	None		SCWRF	None	CC,SMC,	Maximum	H	H	M
H2	7.6	7.7	None			None	None		SCWRF	None	CC,	Maximum	H	H	M
H2	7.7	7.8	None			None	None		None	None	CC,	Moderate	M	M	M
H2	7.8	7.9	None			None	None		None	None	CC,	Moderate	M	M	M
H2	7.9	8	None			None	None		None	None	CC,	Moderate	M	M	M
H2	8	8.1	None			None	None		None	None	CC,	Moderate	H	H	M
H2	8.1	8.2	None			None	None		None	None	CC,	Moderate	H	H	M
H2	8.2	8.3	None			None	None		SCWRF	None	CC,	Maximum	H	H	M
H2	8.3	8.4	None			None	None		SCWRF	None	CC,	Maximum	H	H	M
H2	8.4	8.5	None			None	None		None	None	CC,	Moderate	H	H	M
H2	8.5	8.6	None			None	None		None	None	CC,	Moderate	H	H	M
H2	8.6	8.7	None			None	None		None	None	CC,	Moderate	H	H	M
H2	8.7	8.8	None			None	Maximum		None	None	CC,	Moderate	H	H	M
H2	8.8	8.9	None			None	None		None	None	CC,	Moderate	H	H	M
H2	8.9	9	None			None	None		None	None	CC,	Moderate	H	H	M
H2	9	9.1	None			None	Maximum		None	None	CC,	Moderate	H	H	M
H2	9.1	9.2	None			None	Maximum		None	None	CC,	Moderate	H	H	M
H2	9.2	9.3	None			None	Maximum		None	None	CC,	Moderate	H	H	M
H2	9.3	9.4	None			None	Maximum		None	None	CC,	Moderate	H	H	M
H2	9.4	9.5	None			None	None		SCWRF	None	CC,	Maximum	H	H	M
H2	9.5	9.6	None			None	None		SCWRF	None	CC,	Maximum	H	H	M
H2	9.6	9.7	None			None	Maximum		None	None	CC,	Moderate	H	H	M
H2	9.7	9.8	None			None	None		None	None	CC,	Moderate	H	H	M
H2	9.8	9.9	None			None	Maximum		None	None	CC,	Moderate	H	H	M
H2	9.9	10	None			None	None		SCWRF	None	CC,	Maximum	H	H	M
H2	10	10.1	None			None	None		SCWRF	None	CC,	Maximum	H	H	M
H2	10.1	10.2	None			None	Maximum		None	None	CC,	Moderate	H	H	M
H2	10.2	10.3	None			None	Maximum		None	None	CC,	Moderate	H	H	M
H2	10.3	10.4	None			None	Maximum		None	None	CC,	Moderate	H	H	M
H2	10.4	10.5	None			None	None		None	None	CC,	Moderate	H	H	M
H2	10.5	10.6	None			None	None		None	None	CC,	Moderate	H	H	M
H2	10.6	10.7	None			None	None		SCWRF	None	CC,	Maximum	H	H	M
H2	10.7	10.8	None			None	None		SCWRF	None	CC,	Maximum	H	H	M
H2	10.8	10.9	None			None	Maximum		SCWRF	None	CC,	Maximum	H	H	M
H2	10.9	11	None			None	Maximum		None	None	CC,	Moderate	H	H	M
H2	11	11.1	None			None	None		None	None	CC,	Moderate	H	H	M
H2	11.1	11.2	None			None	Maximum		None	None	CC,	Moderate	H	H	M
H2	11.2	11.3	None			None	Maximum		None	None	CC,	Moderate	H	H	M
H2	11.3	11.4	None			None	Maximum		None	None	CC,	Moderate	H	H	M
H2	11.4	11.5	None			None	Maximum		None	None	CC,	Moderate	H	H	M
H2	11.5	11.6	None			None	Maximum		None	None	CC,	Moderate	H	H	M
H2	11.6	11.7	None			None	Maximum		None	None	CC,	Moderate	H	H	M

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
H2	11.7	11.8	None			None	None		None	None	CC,	Moderate	H	H	L
H2	11.8	11.9	None			None	None		None	None	CC,	Moderate	H	H	L
H2	11.9	12	None			None	Maximum		None	None	CC,	Moderate	H	H	M
H2	12	12.1	None			None	Maximum		None	None	CC,	Moderate	H	H	M
H2	12.1	12.2	None			None	None		None	None	CC,	Moderate	H	H	L
H2	12.2	12.3	None			None	None		None	None	CC,	Moderate	H	H	L
H2	12.3	12.4	None			None	None		None	None	CC,	Moderate	H	H	L
H2	12.4	12.5	None			None	None		None	None	CC,	Moderate	H	H	L
H2	12.5	12.6	None			None	None		SCLORF	None	CC,	Maximum	H	H	H
H2	12.6	12.7	None			None	None		SCLORF	None	CC,	Maximum	H	H	H
H2	12.7	12.8	None			None	None		None	None	CC,	Moderate	H	H	L
H2	12.8	12.9	None			None	None		None	None	CC,	Moderate	H	H	L
H2	12.9	13	None			None	None		None	None	CC,	Moderate	H	H	L
H2	13	13.1	None			None	None		None	None	CC,	Moderate	H	H	L
H2	13.1	13.2	None			None	None		None	None	CC,	Moderate	H	H	L
H2	13.2	13.3	None			None	None		None	None	CC,	Moderate	H	H	L
H2	13.3	13.4	None			None	None		None	None	CC,	Moderate	H	H	L
H2	13.4	13.5	None			None	None		None	None	CC,	Moderate	H	H	L
H2	13.5	13.6	None			None	None		None	None	CC,	Moderate	H	H	L
H2	13.6	13.7	None			None	None		None	None	CC,	Moderate	H	H	L
H2	13.7	13.8	None			None	None		None	None	CC,	Moderate	H	H	L
H2	13.8	13.9	None			None	None		None	None	CC,	Moderate	H	H	M
H2	13.9	14	None			None	None		None	None	CC,	Moderate	H	H	M
H2	14	14.1	None			None	None		None	None	CC,	Moderate	H	H	M
H2	14.1	14.2	None			None	None		None	None	CC,	Moderate	H	H	M
H2	14.2	14.3	None			None	None		None	None	CC,	Moderate	H	H	M
H2	14.3	14.4	None			None	None		None	None	CC,	Moderate	H	H	L
H2	14.4	14.5	None			None	None		None	None	CC,	Moderate	H	H	L
H2	14.5	14.6	None			None	None		None	None	CC,	Moderate	H	H	L
H2	14.6	14.7	None			None	None		None	None	CC,	Moderate	H	H	L
H2	14.7	14.8	None			None	None		None	None	CC,	Moderate	H	H	L
H2	14.8	14.9	None			None	None		None	None	CC,	Moderate	H	H	L
H2	14.9	15	None			None	None		None	None	CC,	Moderate	H	H	M
H2	15	15.1	None			None	None		None	None	CC,	Moderate	H	H	M
H2	15.1	15.2	None			None	None		None	None	CC,	Moderate	H	H	M
H2	15.2	15.3	None			None	None		SCLORF	None	CC,	Maximum	H	H	H
H2	15.3	15.4	None			None	Maximum		SCLORF	None	CC,	Maximum	H	H	H
H2	15.4	15.5	None			None	Maximum		None	None	CC,	Moderate	H	H	M
H2	15.5	15.6	None			None	None		SCLORF, SSARW	None	CC,	Maximum	H	H	H
H2	15.6	15.7	None			None	None		SCLORF, SSARW	None	CC,	Maximum	H	H	H
H2	15.7	15.8	None			None	None		SCLORF, SSARW	None	CC,	Maximum	H	H	H
H2	15.8	15.9	None			None	None		None	None	CC,	Moderate	H	H	L
H2	15.9	16	None			None	None		None	None	CC,	Moderate	H	H	L
H2	16	16.1	None			None	None		None	None	CC,	Moderate	M	M	M
H2	16.1	16.2	None			None	None		None	None	CC,	Moderate	M	H	M
H2	16.2	16.3	None			None	None		None	None	CC,	Moderate	M	H	M
H2	16.3	16.4	None			None	None		None	None	CC,	Moderate	M	M	L
H2	16.4	16.5	None			None	None		None	None	CC,	Moderate	M	M	L
H2	16.5	16.6	None			None	None		None	None	CC,	Moderate	M	M	M
H2	16.6	16.7	None			None	None		SCLORF	None	CC,	Maximum	H	H	M
H2	16.7	16.8	None			None	None		SCLORF	None	CC,	Maximum	H	H	M
H2	16.8	16.9	None			None	None		SCLORF	None	CC,RSS,	Maximum	H	H	H

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
115	3.7	3.8	None			None	None		None	None	AnGr,	Moderate	M	M	L
115	3.8	3.9	None			None	None		None	None	AnGr,	Moderate	M	M	L
115	3.9	4	None			None	None		None	None	AnGr,RSS,	Maximum	H	H	M
115	4	4.1	None			None	None		None	San Andreas Rift Zone SEA	AnGr,RSS,	Maximum	H	H	M
115	4.1	4.2	None			None	None		None	San Andreas Rift Zone SEA	RSS,	Maximum	H	H	M
115	4.2	4.3	None			None	None		None	San Andreas Rift Zone SEA	RSS,	Maximum	H	H	M
115	4.3	4.4	None			None	None		None	San Andreas Rift Zone SEA	AnGr,RSS,	Maximum	H	H	M
115	4.4	4.5	None			None	None		None	San Andreas Rift Zone SEA	AnGr,RSS,	Maximum	H	H	M
115	4.5	4.6	None			None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
115	4.6	4.7	None			None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
115	4.7	4.8	None			None	None		None	San Andreas Rift Zone SEA	AnGr,RSS,	Maximum	H	H	M
H1	0	0.1	None			None	None		None	None	AnGr,	Moderate	M	M	L
H1	0.1	0.2	None			None	None		None	None	AnGr,	Moderate	M	M	L
H1	0.2	0.3	None			None	None		None	None	AnGr,	Moderate	M	M	L
H1	0.3	0.4	None			None	None		None	None	AnGr,	Moderate	M	M	L
H1	0.4	0.5	None			None	None		None	None	AnGr,	Moderate	M	M	L
H1	0.5	0.6	None			None	None		None	None	AnGr,	Moderate	M	M	L
H1	0.6	0.7	None			None	None		None	None	AnGr,	Moderate	M	M	L
H1	0.7	0.8	None			None	None		None	None	AnGr,	Moderate	M	M	L
H1	0.8	0.9	None			None	None		None	None	AnGr,	Moderate	M	M	L
H1	0.9	1	None			None	None		None	None	AnGr,	Moderate	M	M	L
H1	1	1.1	None			None	None		None	None	AnGr,	Moderate	M	M	L
H1	1.1	1.2	None			None	None		None	None	AnGr,	Moderate	M	M	L
H1	1.2	1.3	None			None	None		None	None	AnGr,	Moderate	M	M	L
H1	1.3	1.4	None			None	None		None	None	AnGr,	Moderate	M	M	L
H1	1.4	1.5	None			None	None		None	None	AnGr,	Moderate	M	M	L
H1	1.5	1.6	None			None	None		None	None	AnGr,	Moderate	M	M	L
H1	1.6	1.7	None			None	None		None	None	AnGr,	Moderate	M	M	L
H1	1.7	1.8	None			None	None		None	None	AnGr,	Moderate	M	M	L
H1	1.8	1.9	None			None	None		None	None	AnGr,	Moderate	M	M	L
H1	1.9	2	None			None	None		None	None	AnGr,	Moderate	M	M	L
H1	2	2.1	None			None	None		None	None	AnGr,	Moderate	M	M	L
H1	2.1	2.2	None			None	None		None	None	AnGr,	Moderate	M	M	L
H1	2.2	2.3	None			None	None		None	San Andreas Rift Zone SEA	AnGr,	Maximum	H	H	M
H1	2.3	2.4	None			None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
H1	2.4	2.5	None			None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
H1	2.5	2.6	None			None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
H1	2.6	2.7	None			None	None		None	San Andreas Rift Zone SEA	AnGr,RSS,	Maximum	H	H	M
H1	2.7	2.7	None			None	None		None	San Andreas Rift Zone SEA	AnGr,RSS,	Maximum	H	H	M
H2	0	0.1	None			None	None		None	San Andreas Rift Zone SEA	RSS,	Maximum	H	H	M
H2	0.1	0.2	None			None	None		None	San Andreas Rift Zone SEA	RSS,	Maximum	H	H	M
H2	0.2	0.3	None			None	None		None	San Andreas Rift Zone SEA	RSS,	Maximum	H	H	M
H2	0.3	0.4	None			None	None		None	San Andreas Rift Zone SEA	RSS,	Maximum	H	H	M
H2	0.4	0.5	None			None	None		None	San Andreas Rift Zone SEA	Ag,RSS,	Maximum	H	H	M
H2	0.5	0.6	None			None	None		None	San Andreas Rift Zone SEA	Ag,RSS,	Maximum	H	H	M
H2	0.6	0.7	None			None	None		None	San Andreas Rift Zone SEA	Ag,	Minimal	L	H	M
H2	0.7	0.8	None			None	None		None	San Andreas Rift Zone SEA	Ag,	Minimal	L	H	M
H2	0.8	0.9	None			None	None		None	San Andreas Rift Zone SEA	Ag,	Minimal	L	H	M
H2	0.9	1	None			None	None		None	San Andreas Rift Zone SEA	Ag,	Minimal	L	H	M
H2	1	1.1	None			None	None		None	San Andreas Rift Zone SEA	Ag,	Minimal	L	H	M
H2	1.1	1.2	None			None	None		None	San Andreas Rift Zone SEA	Ag,	Minimal	L	H	M
H2	1.2	1.3	None			None	None		None	San Andreas Rift Zone SEA	Ag,	Minimal	L	H	M

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
H2	1.3	1.4	None			None	None		None	San Andreas Rift Zone SEA	Ag,	Minimal	L	H	M
H2	1.4	1.5	None			None	None		None	San Andreas Rift Zone SEA	Ag,RSS,	Maximum	H	H	M
H2	1.5	1.6	None			None	None		None	San Andreas Rift Zone SEA	RSS,	Maximum	H	H	M
H2	1.6	1.7	None			None	None		None	None	RSS,	Maximum	H	H	L
H2	1.7	1.8	None			None	None		None	None	RSS,	Maximum	H	H	L
H2	1.8	1.9	None			None	None		None	None	RSS,	Maximum	H	H	L
H2	1.9	2	None			None	None		None	None	RSS,SMC,	Maximum	H	H	L
H2	2	2.1	None			None	None		None	None	SMC,	Moderate	M	M	L
H2	2.1	2.2	None			None	None		None	None	SMC,	Moderate	M	M	L
H2	2.2	2.3	None			None	None		None	None	SMC,	Moderate	M	M	L
H2	2.3	2.4	None			None	None		None	None	SMC,	Moderate	M	M	L
H2	2.4	2.5	None			None	None		None	None	SMC,	Moderate	M	M	L
H2	2.5	2.6	None			None	None		None	None	SMC,	Moderate	M	M	L
H2	2.6	2.7	None			None	None		None	None	SMC,	Moderate	M	M	L
H2	2.7	2.8	None			None	None		None	None	SMC,	Moderate	M	H	L
H2	2.8	2.9	None			None	None		None	None	SMC,	Moderate	M	H	L
H2	2.9	3	None			None	None		None	None	SMC,	Moderate	M	H	L
H2	3	3.1	None			None	None		None	None	SMC,	Moderate	H	H	L
H2	3.1	3.2	None			None	None		None	None	SMC,	Moderate	H	H	L
H2	3.2	3.3	None			None	None		None	None	SMC,	Moderate	H	H	L
H2	3.3	3.4	None			None	None		None	None	SMC,	Moderate	H	H	L
H2	3.4	3.5	None			None	None		None	None	SMC,	Moderate	H	H	L
H2	3.5	3.6	None			None	None		None	None	SMC,	Moderate	H	H	L
H2	3.6	3.7	None			None	None		None	None	SMC,	Moderate	H	H	L
H2	3.7	3.8	None			None	None		None	None	SOC,SMC,	Moderate	H	H	M
H2	3.8	3.9	None			None	None		None	None	SOC,	Moderate	H	H	M
H2	3.9	4	None			None	None		None	None	SOC,SMC,	Moderate	H	H	M
H2	4	4.1	None			None	None		None	None	SOC,SMC,	Moderate	H	H	M
H2	4.1	4.2	None			None	None		None	None	SMC,	Moderate	H	H	L
H2	4.2	4.3	None			None	None		None	None	SMC,	Moderate	H	H	L
H2	4.3	4.4	None			None	None		None	None	SMC,	Moderate	H	H	L
H2	4.4	4.5	None			None	None		None	None	SMC,	Moderate	H	H	L
H2	4.5	4.6	None			None	None		None	None	SMC,	Moderate	H	H	L
H2	4.6	4.7	None			None	None		None	None	SMC,	Moderate	H	H	L
H2	4.7	4.8	None			None	None		None	None	SMC,	Moderate	H	H	L
H2	4.8	4.9	None			None	None		None	None	SMC,	Moderate	H	H	L
H2	4.9	5	None			None	None		None	None	SMC,	Moderate	H	H	M
H2	5	5.1	None			None	None		None	None	SMC,	Moderate	H	H	M
H2	5.1	5.2	None			None	None		None	None	SMC,	Moderate	M	M	M
H2	5.2	5.3	None			None	None		None	None	SMC,	Moderate	M	M	M
H2	5.3	5.4	None			None	None		None	None	SMC,	Moderate	M	M	M
H2	5.4	5.5	None			None	None		None	None	SMC,	Moderate	M	H	M
H2	5.5	5.6	None			None	None		None	None	SMC,	Moderate	M	M	M
H2	5.6	5.7	None			None	None		None	None	SMC,	Moderate	M	H	M
H2	5.7	5.8	None			None	None		None	None	SMC,	Moderate	M	H	M
H2	5.8	5.9	None			None	None		None	None	SMC,	Moderate	M	M	M
H2	5.9	6	None			None	None		None	None	SMC,	Moderate	M	M	M
H2	6	6.1	None			None	None		None	None	SMC,	Moderate	M	M	M
H2	6.1	6.2	None			None	Maximum		None	None	SMC,	Moderate	M	H	M
H2	6.2	6.3	None			None	Maximum		None	None	SMC,	Moderate	M	H	M
H2	6.3	6.4	None			None	Maximum		None	None	SMC,	Moderate	M	H	M
H2	6.4	6.5	None			None	None		None	None	SMC,	Moderate	M	M	M

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
2a	3.6	3.7	2A	3.6	3.7	None	None		None	None	SMC,	Moderate	H	H	L
2a	3.7	3.8	2A	3.7	3.8	None	None	NI	None	None	SMC,	Moderate	H	H	L
2a	3.8	3.9	2A	3.8	3.9	None	None	NI	None	None	SMC,	Moderate	H	H	L
2a	3.9	4	2A	3.9	4	None	None	NI	None	None	SMC,	Moderate	H	H	L
2a	4	4.1	2A	4	4.1	None	None		None	None	SMC,	Moderate	H	H	L
2a	4.1	4.2	2A	4.1	4.2	None	None		None	None	SMC,	Moderate	H	H	L
2a	4.2	4.3	2A	4.2	4.3	None	None		None	None	SMC,	Moderate	H	H	L
2a	4.3	4.4	2A	4.3	4.4	None	None		None	None	SMC,	Moderate	H	H	L
2a	4.4	4.5	2A	4.4	4.5	None	None		None	None	SMC,	Moderate	H	H	L
2a	4.5	4.6	2A	4.5	4.6	None	None		None	None	SMC,	Moderate	H	H	L
2a	4.6	4.7	2A	4.6	4.7	None	None		None	None	SMC,	Moderate	H	H	L
2a	4.7	4.8	2A	4.7	4.8	None	None		None	None	SMC,	Moderate	H	H	L
2a	4.8	4.9	2A	4.8	4.9	None	None		None	None	SMC,	Moderate	H	H	L
2a	4.9	5	2A	4.9	5	None	None		None	None	SMC,	Moderate	H	H	L
2a	5	5.1	2A	5	5.1	None	None		None	None	SMC,	Moderate	H	H	L
2a	5.1	5.2	2A	5.1	5.2	None	None		None	None	SMC,	Moderate	H	H	L
2a	5.2	5.3	2A	5.2	5.3	None	None		None	None	SMC,	Moderate	H	H	L
2a	5.3	5.4	2A	5.3	5.4	None	None		None	None	SMC,	Moderate	H	H	M
2a	5.4	5.5	2A	5.4	5.5	None	None		None	None	SMC,	Moderate	H	H	M
2a	5.5	5.6	2A	5.5	5.6	None	None		None	None	SMC,	Moderate	H	H	M
2a	5.6	5.7	2A	5.6	5.7	None	None		None	None	SMC,	Moderate	H	H	L
2a	5.7	5.8	2A	5.7	5.8	None	None		None	None	SMC,	Moderate	H	H	L
2a	5.8	5.9	2A	5.8	5.9	None	None		None	None	SMC,	Moderate	H	H	L
2a	5.9	6	2A	5.9	6	None	None		None	None	SMC,	Moderate	H	H	L
2a	6	6.1	2A	6	6.1	None	None		None	None	SMC,	Moderate	H	H	L
2a	6.1	6.2	2A	6.1	6.2	None	None		None	None	SMC,	Moderate	H	H	M
2a	6.2	6.3	2A	6.2	6.3	None	None		None	None	SMC,	Moderate	H	H	M
2a	6.3	6.4	2A	6.3	6.4	None	None		None	None	SMC,	Moderate	H	H	M
2a	6.4	6.5	2A	6.4	6.5	None	None		None	None	SMC,	Moderate	M	H	L
2a	6.5	6.6	2A	6.5	6.6	None	None		None	None	DD,SMC,	Moderate	M	H	L
F2	0	0.1	3	40.7	40.8	None	None		None	None	Ag,	Minimal	L	M	L
F1	0	0.1	3	39.8	39.9	None	None		None	None	Ag,	Minimal	L	M	L
F1	0.1	0.2	3	39.9	40	None	None		None	None	Ag,	Minimal	L	M	L
F2	0.1	0.2	3	40.8	40.9	None	None		None	None	Ag,	Minimal	L	M	L
F1	0.2	0.3	3	40	40.1	None	None		None	None	Ag,	Minimal	L	M	L
F2	0.2	0.3	3	40.9	41	None	None		None	None	Ag,	Minimal	L	M	L
F1	0.3	0.4	3	40.1	40.2	None	None		None	None	Ag,	Minimal	L	M	L
F2	0.3	0.4	3	41	41.1	None	None		None	None	Ag,	Minimal	L	M	L
F1	0.4	0.5	3	40.2	40.3	None	None		None	None	Ag,	Minimal	L	M	L
F2	0.4	0.5	3	41.1	41.2	None	None		None	None	Ag,	Minimal	L	M	L
F1	0.5	0.6	3	40.3	40.4	None	None		None	None	Ag,	Minimal	L	M	L
F2	0.5	0.6	3	41.2	41.3	None	None		None	None	Ag,	Minimal	L	M	L
F1	0.6	0.7	3	40.4	40.5	None	None		None	None	Ag,	Minimal	L	M	L
F2	0.6	0.7	3	41.3	41.4	None	None		None	None	Ag,	Minimal	L	M	L
F1	0.7	0.8	3	40.5	40.6	None	None		None	None	Ag,	Minimal	L	M	L
F2	0.7	0.8	3	41.4	41.5	None	None		None	None	Ag,	Minimal	L	M	L
F1	0.8	0.8	3	40.6	40.7	None	None		None	None	Ag,	Minimal	L	M	L
F2	0.8	0.9	3	41.5	41.6	None	None		None	None	Ag,	Minimal	L	M	L
F2	0.9	1	3	41.6	41.7	None	None		None	None	Ag,AnGr,	Moderate	M	M	L
F2	1	1.1	3	41.7	41.8	None	None		None	None	Ag,AnGr,	Moderate	M	M	L
F2	1.1	1.2	3	41.8	41.9	None	None		None	None	AnGr,	Moderate	M	M	L
F2	1.2	1.3	3	41.9	42	None	None		None	None	AnGr,	Moderate	M	M	L

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
F2	1.3	1.4	3	42	42.1	None	None		None	None	AnGr,	Moderate	M	M	L
F2	1.4	1.5	3	42.1	42.2	None	None		None	None	AnGr,	Moderate	M	M	L
F2	1.5	1.6	3	42.2	42.3	None	None		None	None	AnGr,	Moderate	M	M	L
F2	1.6	1.7	3	42.3	42.4	None	None		None	None	AnGr,	Moderate	M	M	L
F2	1.7	1.8	3	42.4	42.5	None	None		None	None	AnGr,	Moderate	M	M	L
F2	1.8	1.9	3	42.5	42.6	None	None		None	None	AnGr,	Moderate	M	M	L
F2	1.9	2	3	42.6	42.7	None	None		None	None	AnGr,	Moderate	M	M	L
F2	2	2.1	3	42.7	42.8	None	None		None	None	AnGr,	Moderate	M	M	L
F2	2.1	2.2	3	42.8	42.9	None	None		None	None	AnGr,	Moderate	M	M	L
F2	2.2	2.3	3	42.9	43	None	None		None	None	AnGr,	Moderate	M	M	L
F2	2.3	2.4	3	43	43.1	None	None		None	None	AnGr,	Moderate	M	M	L
F2	2.4	2.5	3	43.1	43.2	None	None		None	None	AnGr,	Moderate	M	M	L
F2	2.5	2.6	3	43.2	43.3	None	None		None	None	AnGr,	Moderate	M	M	L
F2	2.6	2.7	3	43.3	43.4	None	None		None	None	AnGr,	Moderate	M	M	L
F2	2.7	2.8	3	43.4	43.5	None	None		None	None	AnGr,	Moderate	M	M	L
115	0	0.1	None			None	None		None	None	Ag,	Minimal	L	M	L
115	0.1	0.2	None			None	None		None	None	Ag,	Minimal	L	M	L
115	0.2	0.3	None			None	None		None	None	Ag,	Minimal	L	M	L
115	0.3	0.4	None			None	None		None	None	Ag,	Minimal	L	M	L
115	0.4	0.5	None			None	None		None	None	Ag,	Minimal	L	M	L
115	0.5	0.6	None			None	None		None	None	Ag,	Minimal	L	M	L
115	0.6	0.7	None			None	None		None	None	Ag,	Minimal	L	M	L
115	0.7	0.8	None			None	None		None	None	Ag,	Minimal	L	M	L
115	0.8	0.9	None			None	None		None	None	Ag,	Minimal	L	M	L
115	0.9	1	None			None	None		None	None	Ag,	Minimal	L	M	L
115	1	1.1	None			None	None		None	None	Ag,	Minimal	L	M	L
115	1.1	1.2	None			None	None		None	None	Ag,	Minimal	L	M	L
115	1.2	1.3	None			None	None		None	None	Ag,	Minimal	L	M	L
115	1.3	1.4	None			None	None		None	None	Ag,	Minimal	L	M	L
115	1.4	1.5	None			None	None		None	None	Ag,	Minimal	L	M	L
115	1.5	1.6	None			None	None		None	None	Ag,	Minimal	L	M	L
115	1.6	1.7	None			None	None		None	None	Ag,	Minimal	L	M	L
115	1.7	1.8	None			None	None		None	None	Ag,	Minimal	L	M	L
115	1.8	1.9	None			None	None		None	None	Ag,	Minimal	L	M	L
115	1.9	2	None			None	None		None	None	Ag,	Minimal	L	M	L
115	2	2.1	None			None	None		None	None	Ag,	Minimal	L	M	L
115	2.1	2.2	None			None	None		None	None	Ag,	Minimal	L	M	L
115	2.2	2.3	None			None	None		None	None	Ag,	Minimal	L	M	L
115	2.3	2.4	None			None	None		None	None	Ag,AnGr,	Moderate	M	M	L
115	2.4	2.5	None			None	None		None	None	AnGr,	Moderate	M	M	L
115	2.5	2.6	None			None	None		None	None	AnGr,	Moderate	M	M	L
115	2.6	2.7	None			None	None		None	None	AnGr,	Moderate	M	M	L
115	2.7	2.8	None			None	None		None	None	AnGr,	Moderate	M	M	L
115	2.8	2.9	None			None	None		None	None	AnGr,	Moderate	M	M	L
115	2.9	3	None			None	None		None	None	AnGr,	Moderate	M	M	L
115	3	3.1	None			None	None		None	None	AnGr,	Moderate	M	M	L
115	3.1	3.2	None			None	None		None	None	AnGr,	Moderate	M	M	L
115	3.2	3.3	None			None	None		None	None	AnGr,	Moderate	M	M	L
115	3.3	3.4	None			None	None		None	None	AnGr,	Moderate	M	M	L
115	3.4	3.5	None			None	None		None	None	AnGr,	Moderate	M	M	L
115	3.5	3.6	None			None	None		None	None	AnGr,	Moderate	M	M	L
115	3.6	3.7	None			None	None		None	None	AnGr,	Moderate	M	M	L

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
G	14.2	14.3	2, 2A	54	54.1	None	None		None	None	CC,	Moderate	H	H	L
G	14.3	14.4	2, 2A	54.1	54.2	None	None		None	None	CC,	Moderate	H	H	L
G	14.4	14.5	2, 2A	54.2	54.3	None	None		None	None	CC,	Moderate	H	H	L
G	14.5	14.6	2, 2A	54.3	54.4	None	Maximum		None	None	CC,	Moderate	H	H	L
G	14.6	14.7	2, 2A	54.4	54.5	None	None		None	None	CC,	Moderate	H	H	L
G	14.7	14.8	2, 2A	54.5	54.6	None	Maximum		None	None	CC,	Moderate	H	H	L
G	14.8	14.9	2, 2A	54.6	54.7	None	None		None	None	CC,	Moderate	H	H	L
G	14.9	15	2, 2A	54.7	54.8	None	None		None	None	CC,	Moderate	H	H	L
G	15	15.1	2, 2A	54.8	54.9	None	None		None	None	CC,	Moderate	H	H	L
G	15.1	15.2	2, 2A	54.9	55	None	None		None	None	CC,	Moderate	M	H	L
G	15.2	15.3	2, 2A	55	55.1	None	Maximum		None	None	CC,	Moderate	M	H	L
G	15.3	15.4	2, 2A	55.1	55.2	None	Maximum		None	None	CC,	Moderate	M	H	L
G	15.4	15.5	2, 2A	55.2	55.3	None	Maximum		None	None	CC,	Moderate	M	H	L
G	15.5	15.6	2, 2A	55.3	55.4	None	None		None	None	CC,	Moderate	M	H	L
G	15.6	15.7	2, 2A	55.4	55.5	None	Maximum		None	None	CC,	Moderate	M	H	L
G	15.7	15.8	2, 2A	55.5	55.6	None	Maximum		None	None	CC,	Moderate	M	H	L
G	15.8	15.9	2, 2A	55.6	55.7	None	Maximum		None	None	CC,	Moderate	M	H	L
G	15.9	16	2, 2A	55.7	55.8	None	Maximum		None	None	CC,	Moderate	M	H	L
G	16	16.1	2, 2A	55.8	55.9	None	Maximum		None	None	CC,	Moderate	M	H	L
G	16.1	16.2	2, 2A	55.9	56	None	Maximum		None	None	CC,	Moderate	M	H	L
G	16.2	16.3	2, 2A	56	56.1	None	Maximum		None	None	CC,	Moderate	M	H	L
G	16.3	16.4	2, 2A	56.1	56.2	None	None		None	None	CC,	Moderate	M	H	L
G	16.4	16.5	2, 2A	56.2	56.3	None	Maximum		None	None	CC,	Moderate	M	H	L
G	16.5	16.6	2, 2A	56.3	56.4	None	None		None	None	CC,	Moderate	M	H	L
G	16.6	16.7	2, 2A	56.4	56.5	None	None		None	None	CC,	Moderate	M	H	L
G	16.7	16.8	2, 2A	56.5	56.6	None	None		SCLORF	None	CC,	Maximum	H	H	L
G	16.8	16.9	2, 2A	56.6	56.7	None	None		None	None	CC,	Moderate	M	M	L
G	16.9	17	2, 2A	56.7	56.8	None	None		None	None	CC,	Moderate	M	M	L
G	17	17.1	2, 2A	56.8	56.9	None	None		None	None	CC,	Moderate	H	H	L
G	17.1	17.2	2, 2A	56.9	57	None	None		None	None	CC,	Moderate	H	H	L
G	17.2	17.3	2, 2A	57	57.1	None	Maximum		SCLORF	None	CC,	Maximum	H	H	L
G	17.3	17.4	2, 2A	57.1	57.2	None	Maximum		SCLORF	None	CC,	Maximum	H	H	L
G	17.4	17.5	2, 2A	57.2	57.3	None	Maximum		SCLORF	None	CC,	Maximum	H	H	L
G	17.5	17.6	2, 2A	57.3	57.4	None	None		SCLORF	None	CC,	Maximum	H	H	L
G	17.6	17.7	2, 2A	57.4	57.5	None	None		SCLORF	None	CC,	Maximum	H	H	L
G	17.7	17.8	2, 2A	57.5	57.6	None	None		SCLORF	None	CC,	Maximum	H	H	L
G	17.8	17.9	2, 2A	57.6	57.7	None	None		SCLORF	None	CC,	Maximum	H	H	L
G	17.9	18	2, 2A	57.7	57.8	None	None		SCLORF	None	CC,	Maximum	H	H	L
G	18	18.1	2, 2A	57.8	57.9	None	None		SCLORF	None	CC,	Maximum	H	H	L
G	18.1	18.2	2, 2A	57.9	58	None	Maximum		SCLORF	None	CC,	Maximum	H	H	L
G	18.2	18.3	2, 2A	58	58.1	None	None		SCLORF	None	CC,	Maximum	H	H	L
G	18.3	18.4	2, 2A	58.1	58.2	None	None		None	None	CC,	Moderate	M	H	L
G	18.4	18.5	2, 2A	58.2	58.3	None	None		None	None	CC,	Moderate	M	H	L
G	18.5	18.6	2, 2A	58.3	58.4	None	None		None	None	CC,	Moderate	M	M	L
G	18.6	18.7	2, 2A	58.4	58.5	None	None		None	None	CC,	Moderate	M	H	L
G	18.7	18.8	2, 2A	58.5	58.6	None	None		None	None	CC,	Moderate	M	M	L
G	18.8	18.9	2, 2A	58.6	58.7	None	None		None	None	CC,	Moderate	M	M	L
G	18.9	19	2, 2A	58.7	58.8	None	None		None	None	CC,	Moderate	M	H	L
G	19	19.1	2, 2A	58.8	58.9	None	Maximum		None	None	CC,	Moderate	M	H	L
G	19.1	19.2	2, 2A	58.9	59	None	Maximum		None	None	CC,	Moderate	M	H	L
G	19.2	19.3	2, 2A	59	59.1	None	None		None	None	CC,RSS,	Maximum	H	H	L
G	19.3	19.4	2, 2A	59.1	59.2	None	None		None	None	CC,RSS,	Maximum	H	H	L

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
G	19.4	19.5	2, 2A	59.2	59.3	None	None		None	None	CC,RSS,	Maximum	H	H	L
G	19.5	19.6	2, 2A	59.3	59.4	None	None		None	None	CC,RSS,	Maximum	H	H	L
G	19.6	19.7	2, 2A	59.4	59.5	None	None		None	None	CC,RSS,	Maximum	H	H	L
G	19.7	19.8	2, 2A	59.5	59.6	None	None		None	None	CC,RSS,	Maximum	H	H	L
G	19.8	19.9	2, 2A	59.6	59.7	None	Maximum		None	None	RSS,	Maximum	H	H	L
G	19.9	20	2, 2A	59.7	59.8	None	Maximum		None	None	RSS,	Maximum	H	H	L
G	20	20.1	2, 2A	59.8	59.9	None	Maximum		None	None	RSS,	Maximum	H	H	L
G	20.1	20.2	2, 2A	59.9	60	None	Maximum		None	None	RSS,	Maximum	H	H	L
G	20.2	20.3	2, 2A	60	60.1	None	Maximum		None	None	RSS,	Maximum	H	H	L
G	20.3	20.4	2, 2A	60.1	60.2	None	Maximum		None	None	CC,RSS,	Maximum	H	H	L
G	20.4	20.5	2, 2A	60.2	60.3	None	Maximum		None	None	CC,RSS,	Maximum	H	H	L
G	20.5	20.6	2, 2A	60.3	60.4	None	Maximum		None	None	CC,RSS,	Maximum	H	H	L
G	20.6	20.7	2, 2A	60.4	60.5	None	Maximum		None	None	CC,RSS,	Maximum	H	H	L
G	20.7	20.8	2, 2A	60.5	60.6	None	None		SSARW	None	RSS,	Maximum	H	H	L
G	20.8	20.9	2, 2A	60.6	60.7	None	None		SSARW	None	RSS,	Maximum	H	H	L
G	20.9	21	2, 2A	60.7	60.8	None	None		None	None	RSS,	Maximum	H	H	L
2a	0	0.1	2A	0	0.1	None	None		None	None	DD,	Minimal	L	L	L
2a	0.1	0.2	2A	0.1	0.2	None	None		None	None	DD,	Minimal	M	M	L
2a	0.2	0.3	2A	0.2	0.3	None	None		None	None	DD,	Minimal	M	M	L
2a	0.3	0.4	2A	0.3	0.4	None	None		None	None	DD,	Minimal	M	M	L
2a	0.4	0.5	2A	0.4	0.5	None	None		None	None	DD,	Minimal	M	M	L
2a	0.5	0.6	2A	0.5	0.6	None	None		None	None	DD,	Minimal	M	M	L
2a	0.6	0.7	2A	0.6	0.7	None	None		None	None	DD,	Minimal	M	M	L
2a	0.7	0.8	2A	0.7	0.8	None	None		None	None	DD,	Minimal	M	M	L
2a	0.8	0.9	2A	0.8	0.9	None	None		None	None	DD,	Minimal	M	M	L
2a	0.9	1	2A	0.9	1	None	None		None	None	DD,	Minimal	M	M	L
2a	1	1.1	2A	1	1.1	None	None		None	None	DD,	Minimal	M	M	L
2a	1.1	1.2	2A	1.1	1.2	None	None		None	None	DD,	Minimal	M	H	L
2a	1.2	1.3	2A	1.2	1.3	None	None		None	None	DD,	Minimal	M	H	L
2a	1.3	1.4	2A	1.3	1.4	None	None		None	None	DD,	Minimal	M	H	L
2a	1.4	1.5	2A	1.4	1.5	None	None		None	None	DD,	Minimal	M	H	L
2a	1.5	1.6	2A	1.5	1.6	None	None		None	None	DD,	Minimal	M	M	L
2a	1.6	1.7	2A	1.6	1.7	None	None		None	None	DD,SOC,	Moderate	H	H	M
2a	1.7	1.8	2A	1.7	1.8	None	None		None	None	SOC,	Moderate	H	H	M
2a	1.8	1.9	2A	1.8	1.9	None	None		None	None	SOC,	Moderate	H	H	M
2a	1.9	2	2A	1.9	2	None	None		None	None	SOC,	Moderate	H	H	M
2a	2	2.1	2A	2	2.1	None	None		None	None	SOC,	Moderate	H	H	M
2a	2.1	2.2	2A	2.1	2.2	None	None		None	None	SOC,SMC,	Moderate	H	H	L
2a	2.2	2.3	2A	2.2	2.3	None	None		None	None	ILOC,SOC,SMC,	Maximum	H	H	M
2a	2.3	2.4	2A	2.3	2.4	None	None		None	None	ILOC,SMC,	Maximum	H	H	M
2a	2.4	2.5	2A	2.4	2.5	None	None		None	None	ILOC,SMC,	Maximum	H	H	M
2a	2.5	2.6	2A	2.5	2.6	None	None		None	None	ILOC,SMC,	Maximum	H	H	M
2a	2.6	2.7	2A	2.6	2.7	None	None		None	None	ILOC,SMC,	Maximum	H	H	M
2a	2.7	2.8	2A	2.7	2.8	None	None		None	None	ILOC,SMC,	Maximum	H	H	M
2a	2.8	2.9	2A	2.8	2.9	None	None		None	None	ILOC,	Maximum	H	H	M
2a	2.9	3	2A	2.9	3	None	None		None	None	ILOC,	Maximum	H	H	L
2a	3	3.1	2A	3	3.1	None	None		None	None	ILOC,	Maximum	H	H	L
2a	3.1	3.2	2A	3.1	3.2	None	None		None	None	ILOC,	Maximum	H	H	M
2a	3.2	3.3	2A	3.2	3.3	None	None		None	None	ILOC,SMC,	Maximum	H	H	M
2a	3.3	3.4	2A	3.3	3.4	None	None		None	None	ILOC,SMC,	Maximum	H	H	L
2a	3.4	3.5	2A	3.4	3.5	None	None		None	None	SMC,	Moderate	H	H	L
2a	3.5	3.6	2A	3.5	3.6	None	None		None	None	SMC,	Moderate	H	H	L

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
G	3.8	3.9	2, 2A	43.6	43.7	None	None		None	None	AnGr,	Moderate	M	M	L
G	3.9	4	2, 2A	43.7	43.8	None	None		None	San Andreas Rift Zone SEA (Draft '08)	AnGr,	Maximum	H	H	L
G	4	4.1	2, 2A	43.8	43.9	None	None		None	San Andreas Rift Zone SEA (Draft '08)	AnGr,SMC,	Moderate	M	H	L
G	4.1	4.2	2, 2A	43.9	44	None	None		None	San Andreas Rift Zone SEA (Draft '08)	SMC,	Moderate	M	H	L
G	4.2	4.3	2, 2A	44	44.1	None	None		None	San Andreas Rift Zone SEA (Draft '08)	SMC,	Moderate	M	H	L
G	4.3	4.4	2, 2A	44.1	44.2	None	None		None	San Andreas Rift Zone SEA (Draft '08)	SMC,	Moderate	M	H	L
G	4.4	4.5	2, 2A	44.2	44.3	None	None		None	San Andreas Rift Zone SEA (Draft '08)	SMC,	Moderate	M	H	L
G	4.5	4.6	2, 2A	44.3	44.4	None	None		None	San Andreas Rift Zone SEA (Draft '08)	Ag,SMC,	Moderate	M	H	L
G	4.6	4.7	2, 2A	44.4	44.5	None	None		None	San Andreas Rift Zone SEA (Draft '08)	Ag,SMC,	Moderate	M	H	L
G	4.7	4.8	2, 2A	44.5	44.6	None	None		None	San Andreas Rift Zone SEA (Draft '08)	Ag,	Minimal	L	H	L
G	4.8	4.9	2, 2A	44.6	44.7	None	None		None	San Andreas Rift Zone SEA (Draft '08)	Ag,	Minimal	L	H	L
G	4.9	5	2, 2A	44.7	44.8	None	None		None	San Andreas Rift Zone SEA (Draft '08)	Ag,	Minimal	L	H	L
G	5	5.1	2, 2A	44.8	44.9	None	None		None	San Andreas Rift Zone SEA (Draft '08)	Ag,	Minimal	L	H	L
G	5.1	5.2	2, 2A	44.9	45	None	None		None	San Andreas Rift Zone SEA (Draft '08)	Ag,	Minimal	L	H	L
G	5.2	5.3	2, 2A	45	45.1	None	None		None	San Andreas Rift Zone SEA (Draft '08)	Ag,	Minimal	L	H	L
G	5.3	5.4	2, 2A	45.1	45.2	None	None		None	San Andreas Rift Zone SEA (Draft '08)	Ag,	Minimal	L	H	L
G	5.4	5.5	2, 2A	45.2	45.3	None	None		None	San Andreas Rift Zone SEA (Draft '08)	Ag,	Minimal	L	H	L
G	5.5	5.6	2, 2A	45.3	45.4	None	None		None	San Andreas Rift Zone SEA (Draft '08)	Ag,	Minimal	L	H	L
G	5.6	5.7	2, 2A	45.4	45.5	None	None		None	San Andreas Rift Zone SEA (Draft '08)	Ag,	Minimal	L	H	L
G	5.7	5.8	2, 2A	45.5	45.6	None	None		None	San Andreas Rift Zone SEA (Draft '08)	Ag,	Minimal	L	H	L
G	5.8	5.9	2, 2A	45.6	45.7	None	None		None	None	Ag,	Minimal	L	L	L
G	5.9	6	2, 2A	45.7	45.8	None	None		None	None	Ag,	Minimal	L	L	L
G	6	6.1	2, 2A	45.8	45.9	None	None		None	None	Ag,DD,	Minimal	L	L	L
G	6.1	6.2	2, 2A	45.9	46	None	None		None	None	Ag,DD,	Minimal	L	L	L
G	6.2	6.3	2,	46	46.1	None	None		None	None	DD,	Minimal	L	L	L
G	6.3	6.4	2,	46.1	46.2	None	Maximum		None	None	DD,	Minimal	L	H	L
G	6.4	6.5	2,	46.2	46.3	None	None		None	None	DD,	Minimal	L	H	L
G	6.5	6.6	2,	46.3	46.4	None	None		None	None	DD,	Minimal	L	L	L
G	6.6	6.7	2,	46.4	46.5	None	None		None	None	DD,	Minimal	L	L	L
G	6.7	6.8	2,	46.5	46.6	None	None		None	None	DD,	Minimal	L	L	L
G	6.8	6.9	2,	46.6	46.7	None	None		None	None	DD,	Minimal	L	L	L
G	6.9	7	2,	46.7	46.8	None	None		None	None	DD,	Minimal	L	H	L
G	7	7.1	2,	46.8	46.9	None	None		None	None	DD,	Minimal	L	L	L
G	7.1	7.2	2,	46.9	47	None	None		None	None	DD,	Minimal	L	L	L
G	7.2	7.3	2,	47	47.1	None	None		None	None	DD,	Minimal	L	H	L
G	7.3	7.4	2,	47.1	47.2	None	None		None	None	DD,	Minimal	L	H	L
G	7.4	7.5	2,	47.2	47.3	None	None		None	None	DD,	Minimal	L	H	L
G	7.5	7.6	2,	47.3	47.4	None	None		None	None	DD,	Minimal	L	H	L
G	7.6	7.7	2,	47.4	47.5	None	None		None	None	DD,	Minimal	L	L	L
G	7.7	7.8	2,	47.5	47.6	None	None		None	None	DD,	Minimal	L	L	L
G	7.8	7.9	2,	47.6	47.7	None	None		None	None	DD,	Minimal	L	L	L
G	7.9	8	2,	47.7	47.8	None	None		None	None	DD,SMC,	Moderate	M	M	L
G	8	8.1	2,	47.8	47.9	None	None		None	None	SMC,	Moderate	M	M	L
G	8.1	8.2	2,	47.9	48	None	None		None	None	SMC,	Moderate	M	M	M
G	8.2	8.3	2,	48	48.1	None	None		None	None	DD,SMC,	Moderate	M	M	M
G	8.3	8.4	2,	48.1	48.2	None	None		None	None	DD,SMC,	Moderate	M	M	M
G	8.4	8.5	2,	48.2	48.3	None	None		None	None	DD,	Minimal	L	L	L
G	8.5	8.6	2,	48.3	48.4	None	None		None	None	DD,	Minimal	L	L	L
G	8.6	8.7	2,	48.4	48.5	None	None		None	None	DD,	Minimal	L	L	L
G	8.7	8.8	2,	48.5	48.6	None	None		None	None	DD,	Minimal	L	L	L
G	8.8	8.9	2,	48.6	48.7	None	None		None	None	DD,	Minimal	L	L	L
G	8.9	9	2,	48.7	48.8	None	None		None	None	DD,	Minimal	L	L	L

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
G	9	9.1	2,	48.8	48.9	None	None		None	None	DD,	Minimal	L	L	L
G	9.1	9.2	2,	48.9	49	None	None		None	None	DD,	Minimal	L	L	L
G	9.2	9.3	2,	49	49.1	None	None		None	None	DD,	Minimal	L	L	L
G	9.3	9.4	2,	49.1	49.2	None	None		None	None	DD,	Minimal	L	L	L
G	9.4	9.5	2,	49.2	49.3	None	None		None	None	DD,	Minimal	L	H	M
G	9.5	9.6	2,	49.3	49.4	None	None		None	None	DD,	Minimal	L	H	M
G	9.6	9.7	2,	49.4	49.5	None	None		None	None	DD,	Minimal	L	H	M
G	9.7	9.8	2,	49.5	49.6	None	None		None	None	DD,	Minimal	L	H	M
G	9.8	9.9	2,	49.6	49.7	None	None		None	None	DD,	Minimal	L	L	L
G	9.9	10	2,	49.7	49.8	None	None		None	None	DD,	Minimal	L	L	L
G	10	10.1	2,	49.8	49.9	None	None		None	None	DD,	Minimal	L	L	L
G	10.1	10.2	2,	49.9	50	None	None		None	None	DD,	Minimal	L	H	M
G	10.2	10.3	2,	50	50.1	None	None		None	None	DD,	Minimal	L	L	L
G	10.3	10.4	2,	50.1	50.2	None	None		SSARW	Santa Clara River SEA (Draft '08')	DD,	Maximum	H	H	H
G	10.4	10.5	2,	50.2	50.3	None	None		SSARW	Santa Clara River SEA (Draft '08')	DD,	Maximum	H	H	H
G	10.5	10.6	2,	50.3	50.4	None	None		None	None	DD,	Minimal	L	H	H
G	10.6	10.7	2,	50.4	50.5	None	None		None	None	DD,	Minimal	M	H	H
G	10.7	10.8	2,	50.5	50.6	None	None		None	None	DD,SMC,	Moderate	M	M	M
G	10.8	10.9	2,	50.6	50.7	None	None		None	None	DD,SMC,	Moderate	M	H	H
G	10.9	11	2,	50.7	50.8	None	None		None	None	DD,SMC,	Moderate	M	H	H
G	11	11.1	2, 2A	50.8	50.9	None	None		None	None	DD,SMC,	Moderate	M	H	L
G	11.1	11.2	2, 2A	50.9	51	None	None		None	None	DD,SMC,	Moderate	M	H	L
G	11.2	11.3	2, 2A	51	51.1	None	Moderate		None	None	DD,	Minimal	M	H	L
G	11.3	11.4	2, 2A	51.1	51.2	None	None		None	None	DD,	Minimal	M	H	L
G	11.4	11.5	2, 2A	51.2	51.3	None	None		None	None	DD,	Minimal	M	H	L
G	11.5	11.6	2, 2A	51.3	51.4	None	None		None	None	DD,	Minimal	M	H	L
G	11.6	11.7	2, 2A	51.4	51.5	None	None		None	None	DD,	Minimal	M	H	L
G	11.7	11.8	2, 2A	51.5	51.6	None	None		None	None	DD,	Minimal	M	M	L
G	11.8	11.9	2, 2A	51.6	51.7	None	None		None	None	DD,	Minimal	M	M	L
G	11.9	12	2, 2A	51.7	51.8	None	None		None	None	DD,	Minimal	M	M	L
G	12	12.1	2, 2A	51.8	51.9	None	None		SSARW	None	DD,	Maximum	H	H	L
G	12.1	12.2	2, 2A	51.9	52	None	None		SSARW	None	DD,	Maximum	H	H	L
G	12.2	12.3	2, 2A	52	52.1	None	None		SSARW	Santa Clara River SEA (Draft '08')	DD,	Maximum	H	H	L
G	12.3	12.4	2, 2A	52.1	52.2	None	None		SSARW	Santa Clara River SEA (Draft '08')	DD,SMC,	Maximum	H	H	L
G	12.4	12.5	2, 2A	52.2	52.3	None	Maximum		SSARW	Santa Clara River SEA (Draft '08')	CC,DD,SMC,	Maximum	H	H	L
G	12.5	12.6	2, 2A	52.3	52.4	None	None		None	Santa Clara River SEA (Draft '08')	CC,DD,SMC,	Moderate	H	H	L
G	12.6	12.7	2, 2A	52.4	52.5	None	None		None	Santa Clara River SEA (Draft '08')	CC,SMC,	Moderate	H	H	L
G	12.7	12.8	2, 2A	52.5	52.6	None	None		None	None	SMC,	Moderate	H	H	L
G	12.8	12.9	2, 2A	52.6	52.7	None	None		None	None	SMC,	Moderate	H	H	L
G	12.9	13	2, 2A	52.7	52.8	None	None		None	None	SMC,	Moderate	H	H	L
G	13	13.1	2, 2A	52.8	52.9	None	None		None	None	SMC,	Moderate	H	H	L
G	13.1	13.2	2, 2A	52.9	53	None	None		None	None	SMC,	Moderate	H	H	L
G	13.2	13.3	2, 2A	53	53.1	None	None		None	None	SMC,	Moderate	H	H	L
G	13.3	13.4	2, 2A	53.1	53.2	None	None		None	None	CC,SMC,	Moderate	H	H	L
G	13.4	13.5	2, 2A	53.2	53.3	None	None		None	None	CC,	Moderate	H	H	L
G	13.5	13.6	2, 2A	53.3	53.4	None	None		SRS	None	CC,	Maximum	H	H	L
G	13.6	13.7	2, 2A	53.4	53.5	None	None		SRS	None	CC,	Maximum	H	H	L
G	13.7	13.8	2, 2A	53.5	53.6	None	Maximum		None	None	CC,	Moderate	H	H	L
G	13.8	13.9	2, 2A	53.6	53.7	None	Maximum		None	None	CC,	Moderate	H	H	L
G	13.9	14	2, 2A	53.7	53.8	None	None		None	None	CC,	Moderate	H	H	L
G	14	14.1	2, 2A	53.8	53.9	None	None		None	None	CC,	Moderate	H	H	L
G	14.1	14.2	2, 2A	53.9	54	None	None		None	None	CC,	Moderate	H	H	L

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
E	4.7	4.8	None			None	None		None	None	Ag,	Minimal	L	M	L
E	4.8	4.9	None			None	None		None	None	Ag,	Minimal	L	M	L
E	4.9	5	None			None	None		None	None	Ag,	Minimal	L	M	L
E	5	5.1	None			None	None		None	None	Ag,	Minimal	L	M	L
E	5.1	5.2	None			None	None		None	None	Ag,	Minimal	L	M	L
E	5.2	5.3	None			None	None		None	None	Ag,	Minimal	L	M	L
E	5.3	5.4	None			None	None		None	None	Ag,	Minimal	L	M	L
E	5.4	5.5	None			None	None		None	None	Ag,	Minimal	L	M	L
E	5.5	5.6	None			None	None		None	None	Ag,	Minimal	L	M	L
E	5.6	5.7	None			None	None		None	None	Ag,	Minimal	L	M	L
E	5.7	5.8	None			None	None		None	None	Ag,	Minimal	L	M	L
E	5.8	5.9	None			Joshua Tree Woodlands SEA	Maximum		None	Joshua Tree Woodlands SEA	Ag,JTW,	Maximum	H	H	M
E	5.9	6	None			Joshua Tree Woodlands SEA	Maximum		None	Joshua Tree Woodlands SEA	Ag,JTW,	Maximum	H	H	M
E	6	6.1	None			Joshua Tree Woodlands SEA	Maximum		None	Joshua Tree Woodlands SEA	JTW,	Maximum	H	H	M
E	6.1	6.2	None			Joshua Tree Woodlands SEA	Maximum		None	Joshua Tree Woodlands SEA	JTW,	Maximum	H	H	M
E	6.2	6.3	None			Joshua Tree Woodlands SEA	Maximum		None	Joshua Tree Woodlands SEA	JTW,	Maximum	H	H	M
E	6.3	6.4	None			Joshua Tree Woodlands SEA	Maximum		None	Joshua Tree Woodlands SEA	JTW,	Maximum	H	H	M
E	6.4	6.5	None			Joshua Tree Woodlands SEA	Maximum		None	Joshua Tree Woodlands SEA	JTW,	Maximum	H	H	M
E	6.5	6.6	None			Joshua Tree Woodlands SEA	Maximum		None	Joshua Tree Woodlands SEA	Ag,JTW,	Maximum	H	H	M
E	6.6	6.7	None			Joshua Tree Woodlands SEA	None		None	Joshua Tree Woodlands SEA	Ag,	Minimal	L	H	M
E	6.7	6.8	None			Joshua Tree Woodlands SEA	None		None	Joshua Tree Woodlands SEA	Ag,	Minimal	L	H	M
E	6.8	6.9	None			Joshua Tree Woodlands SEA	None		None	Joshua Tree Woodlands SEA	Ag,	Minimal	L	H	M
E	6.9	7	None			None	None		None	None	Ag,	Minimal	L	M	L
E	7	7.1	None			None	None		None	None	Ag,	Minimal	L	M	L
E	7.1	7.2	None			None	None		None	None	Ag,	Minimal	L	M	L
E	7.2	7.3	None			None	None		None	None	Ag,	Minimal	L	M	L
E	7.3	7.4	None			None	None		None	None	Ag,	Minimal	L	M	L
E	7.4	7.5	None			None	None		None	None	Ag,	Minimal	L	M	L
E	7.5	7.6	None			None	None		None	None	Ag,	Minimal	L	M	L
E	7.6	7.7	None			None	None		None	None	Ag,AnGr,	Moderate	M	M	L
E	7.7	7.8	None			None	None		None	San Andreas Rift Zone SEA	Ag,AnGr,	Moderate	M	H	M
E	7.8	7.9	None			None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
E	7.9	8	None			None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
E	8	8.1	None			None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
E	8.1	8.2	None			None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
E	8.2	8.3	None			None	None		None	San Andreas Rift Zone SEA	Ag,AnGr,	Moderate	M	H	M
E	8.3	8.4	None			None	None		None	San Andreas Rift Zone SEA	Ag,AnGr,	Moderate	M	H	M
E	8.4	8.5	None			None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
E	8.5	8.6	None			None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
E	8.6	8.7	None			None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
E	8.7	8.8	None			None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
E	8.8	8.9	None			None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
E	8.9	9	None			None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
E	9	9.1	None			None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
E	9.1	9.2	None			None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
E	9.2	9.3	None			None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
E	9.3	9.4	None			None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
E	9.4	9.5	None			None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
E	9.5	9.6	None			None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
E	9.6	9.7	None			None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
E	9.7	9.8	None			None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
E	9.8	9.9	None			None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
E	9.9	10	None			None	None		None	San Andreas Rift Zone SEA	Ag,AnGr,	Moderate	M	H	M
E	10	10.1	None			None	None		None	San Andreas Rift Zone SEA	Ag,AnGr,	Moderate	M	H	M
E	10.1	10.2	None			None	None		None	San Andreas Rift Zone SEA	Ag,	Minimal	L	H	M
E	10.2	10.3	None			None	None		None	None	Ag,	Minimal	L	M	L
E	10.3	10.4	None			None	None		None	None	Ag,	Minimal	L	M	L
E	10.4	10.5	None			None	None		None	None	Ag,	Minimal	L	M	L
E	10.5	10.6	None			None	None		None	None	Ag,	Minimal	L	M	L
E	10.6	10.7	None			None	None		None	None	Ag,	Minimal	L	M	L
E	10.7	10.8	None			None	None		None	None	Ag,	Minimal	L	M	L
E	10.8	10.9	None			None	None		None	None	Ag,	Minimal	L	M	L
E	10.9	11	None			None	None		None	None	Ag,	Minimal	L	M	L
E	11	11.1	None			None	None		None	None	Ag,	Minimal	L	M	L
E	11.1	11.2	None			None	None		None	None	Ag,	Minimal	L	M	L
E	11.2	11.3	None			None	None		None	None	Ag,	Minimal	L	M	L
G	0	0.1	2, 2A	39.8	39.9	None	None		None	None	Ag,	Minimal	L	M	L
G	0.1	0.2	2, 2A	39.9	40	None	None		None	None	Ag,	Minimal	L	M	L
G	0.2	0.3	2, 2A	40	40.1	None	None		None	None	Ag,	Minimal	L	M	L
G	0.3	0.4	2, 2A	40.1	40.2	None	None		None	None	Ag,	Minimal	L	M	L
G	0.4	0.5	2, 2A	40.2	40.3	None	None		None	None	Ag,	Minimal	L	M	L
G	0.5	0.6	2, 2A	40.3	40.4	None	None		None	None	Ag,	Minimal	L	M	L
G	0.6	0.7	2, 2A	40.4	40.5	None	None		None	None	Ag,	Minimal	L	M	L
G	0.7	0.8	2, 2A	40.5	40.6	None	None		None	None	Ag,	Minimal	L	M	L
G	0.8	0.9	2, 2A	40.6	40.7	None	None		None	None	Ag,	Minimal	L	M	L
G	0.9	1	2, 2A	40.7	40.8	None	None		None	None	Ag,	Minimal	L	M	L
G	1	1.1	2, 2A	40.8	40.9	None	None		None	None	Ag,	Minimal	L	M	L
G	1.1	1.2	2, 2A	40.9	41	None	None		None	None	Ag,	Minimal	L	M	L
G	1.2	1.3	2, 2A	41	41.1	None	None		None	None	Ag,AnGr,	Moderate	M	M	L
G	1.3	1.4	2, 2A	41.1	41.2	None	None		None	None	AnGr,	Moderate	M	M	L
G	1.4	1.5	2, 2A	41.2	41.3	None	None		None	None	AnGr,	Moderate	M	M	L
G	1.5	1.6	2, 2A	41.3	41.4	None	None		None	None	AnGr,	Moderate	M	M	L
G	1.6	1.7	2, 2A	41.4	41.5	None	None		None	None	AnGr,	Moderate	M	M	L
G	1.7	1.8	2, 2A	41.5	41.6	None	None		None	None	AnGr,	Moderate	M	M	L
G	1.8	1.9	2, 2A	41.6	41.7	None	None		None	None	AnGr,	Moderate	M	M	L
G	1.9	2	2, 2A	41.7	41.8	None	None		None	None	Ag,AnGr,	Moderate	M	M	L
G	2	2.1	2, 2A	41.8	41.9	None	None		None	None	Ag,	Minimal	L	M	L
G	2.1	2.2	2, 2A	41.9	42	None	None		None	None	Ag,	Minimal	L	M	L
G	2.2	2.3	2, 2A	42	42.1	None	None		None	None	Ag,	Minimal	L	M	L
G	2.3	2.4	2, 2A	42.1	42.2	None	None		None	None	Ag,	Minimal	L	M	L
G	2.4	2.5	2, 2A	42.2	42.3	None	None		None	None	Ag,	Minimal	L	M	L
G	2.5	2.6	2, 2A	42.3	42.4	None	None		None	None	Ag,	Minimal	L	M	L
G	2.6	2.7	2, 2A	42.4	42.5	None	None		None	None	Ag,	Minimal	L	M	L
G	2.7	2.8	2, 2A	42.5	42.6	None	None		None	None	Ag,	Minimal	L	M	L
G	2.8	2.9	2, 2A	42.6	42.7	None	None		None	None	Ag,	Minimal	L	L	L
G	2.9	3	2, 2A	42.7	42.8	None	None		None	None	Ag,AnGr,	Moderate	M	M	L
G	3	3.1	2, 2A	42.8	42.9	None	None		None	None	AnGr,	Moderate	M	M	L
G	3.1	3.2	2, 2A	42.9	43	None	None		None	None	AnGr,	Moderate	M	M	L
G	3.2	3.3	2, 2A	43	43.1	None	None		None	None	AnGr,	Moderate	M	M	L
G	3.3	3.4	2, 2A	43.1	43.2	None	None		None	None	AnGr,	Moderate	M	M	L
G	3.4	3.5	2, 2A	43.2	43.3	None	None		None	None	AnGr,	Moderate	M	M	L
G	3.5	3.6	2, 2A	43.3	43.4	None	None		None	None	AnGr,	Moderate	M	M	L
G	3.6	3.7	2, 2A	43.4	43.5	None	None		None	None	AnGr,	Moderate	M	M	L
G	3.7	3.8	2, 2A	43.5	43.6	None	None		None	None	AnGr,	Moderate	M	M	L

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
D	42.5	42.6	1	77.5	77.6	None	None		None	None	CC,RSS,	Maximum	H	H	L
D	42.6	42.7	1	77.6	77.7	None	None		None	None	CC,	Moderate	M	H	L
D	42.7	42.8	1	77.7	77.8	None	None		None	Castaic Lake SRA	CC,	Moderate	M	H	L
D	42.8	42.9	1	77.8	77.9	None	None		None	Castaic Lake SRA	CC,	Moderate	M	H	L
D	42.9	43	1	77.9	78	None	None		None	Castaic Lake SRA	CC,	Moderate	H	H	L
D	43	43.1	1	78	78.1	None	None		None	Castaic Lake SRA	CC,	Moderate	H	H	L
D	43.1	43.2	1	78.1	78.2	None	None		None	Castaic Lake SRA	CC,	Moderate	H	H	L
D	43.2	43.3	1	78.2	78.3	None	None		None	None	CC,	Moderate	H	H	H
D	43.3	43.4	1	78.3	78.4	None	None		None	None	CC,	Moderate	H	H	H
D	43.4	43.5	1	78.4	78.5	None	None		None	None	CC,	Moderate	H	H	H
D	43.5	43.6	1	78.5	78.6	None	None		None	None	CC,	Moderate	H	H	H
D	43.6	43.7	1	78.6	78.7	None	None		None	None	CC,	Moderate	H	H	H
D	43.7	43.8	1	78.7	78.8	None	None		None	None	CC,	Moderate	H	H	H
D	43.8	43.9	1	78.8	78.9	None	None		None	None	CC,	Moderate	H	H	H
D	43.9	44	1	78.9	79	None	None		None	None	CC,	Moderate	H	H	H
D	44	44.1	1	79	79.1	None	None		None	None	CC,	Moderate	H	H	M
D	44.1	44.2	1	79.1	79.2	None	None		None	None	CC,	Moderate	H	H	M
D	44.2	44.3	1	79.2	79.3	None	None		None	None	CC,	Moderate	H	H	M
D	44.3	44.4	1	79.3	79.4	None	None		None	None	CC,	Moderate	H	H	M
D	44.4	44.5	1	79.4	79.5	None	None		None	None	CC,	Moderate	H	H	M
D	44.5	44.6	1	79.5	79.6	None	None		None	None	CC,	Moderate	H	H	M
D	44.6	44.7	1	79.6	79.7	None	None		SCWRF	None	CC,	Maximum	H	H	H
D	44.7	44.8	1	79.7	79.8	None	None		SCWRF	None	CC,	Maximum	H	H	H
D	44.8	44.9	1	79.8	79.9	None	None		None	None	CC,	Moderate	H	H	H
D	44.9	45	1	79.9	80	None	None		None	None	CC,	Moderate	H	H	L
D	45	45.1	1	80	80.1	None	None		None	None	CC,	Moderate	H	H	L
D	45.1	45.2	1	80.1	80.2	None	None		None	None	CC,	Moderate	H	H	L
D	45.2	45.3	1	80.2	80.3	None	None		None	None	CC,	Moderate	H	H	L
D	45.3	45.4	1	80.3	80.4	None	None	NI	None	None	CC,	Moderate	H	H	L
D	45.4	45.5	1	80.4	80.5	None	None	NI	None	None	CC,	Moderate	H	H	L
D	45.5	45.6	1	80.5	80.6	None	None	NI	None	None	CC,	Moderate	H	H	L
D	45.6	45.7	1	80.6	80.7	None	None	NI	None	None	CC,	Moderate	H	H	L
D	45.7	45.8	1	80.7	80.8	None	None		None	None	CC,	Moderate	H	H	L
D	45.8	45.9	1	80.8	80.9	None	None		None	None	CC,	Moderate	H	H	L
D	45.9	46	1	80.9	81	None	None		None	None	CC,	Moderate	M	M	L
D	46	46.1	1	81	81.1	None	None		None	None	CC,	Moderate	M	M	L
D	46.1	46.2	1	81.1	81.2	None	None		None	Santa Clara River SEA (DRAFt '08)	CC,	Moderate	M	H	M
D	46.2	46.3	1	81.2	81.3	None	None		None	Santa Clara River SEA (DRAFt '08)	CC,RSS,	Maximum	H	H	M
D	46.3	46.4	1	81.3	81.4	None	None		None	Santa Clara River SEA (DRAFt '08)	RSS,	Maximum	H	H	L
D	46.4	46.5	1	81.4	81.5	None	None		None	None	RSS,	Maximum	H	H	L
D	46.5	46.6	1	81.5	81.6	None	None		None	None	RSS,	Maximum	H	H	L
D	46.6	46.7	1	81.6	81.7	None	None		None	None	RSS,	Maximum	H	H	L
D	46.7	46.8	1	81.7	81.8	None	None		None	None	RSS,	Maximum	H	H	L
D	46.8	46.9	1	81.8	81.9	None	None		SCLORF	None	RSS,	Maximum	H	H	L
D	46.9	47	1	81.9	82	None	None		SCLORF	None	RSS,	Maximum	H	H	L
D	47	47.1	1	82	82.1	None	Maximum		SCLORF	None	CC,RSS,	Maximum	H	H	H
D	47.1	47.2	1	82.1	82.2	None	Maximum		None	None	CC,RSS,	Maximum	H	H	H
D	47.2	47.3	1	82.2	82.3	None	Maximum		None	None	CC,	Moderate	H	H	H
D	47.3	47.4	1	82.3	82.4	None	Maximum		None	None	CC,	Moderate	H	H	H
D	47.4	47.5	1	82.4	82.5	None	Maximum		None	None	CC,	Moderate	M	H	H
D	47.5	47.6	1	82.5	82.6	None	Maximum		None	None	CC,RSS,	Maximum	H	H	H
D	47.6	47.7	1	82.6	82.7	None	Maximum		None	None	RSS,	Maximum	H	H	H

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
D	47.7	47.8	1	82.7	82.8	None	Maximum		None	None	RSS,	Maximum	H	H	H
D	47.8	47.9	1	82.8	82.9	None	Maximum		None	None	CC,RSS,	Maximum	H	H	H
D	47.9	48	1	82.9	83	None	None		SSARW	None	RSS,	Maximum	H	H	M
D	48	48.1	1	83	83.1	None	None		SSARW	None	RSS,	Maximum	H	H	M
D	48.1	48.2	1	83.1	83.2	None	None		SSARW	None	RSS,	Maximum	H	H	M
E	0	0.1	None			None	None		None	None	MCBS,	Maximum	H	H	L
E	0.1	0.2	None			None	None		None	None	MCBS,	Maximum	H	H	L
E	0.2	0.3	None			None	None		None	None	MCBS,	Maximum	H	H	L
E	0.3	0.4	None			None	None		None	None	MCBS,	Maximum	H	H	L
E	0.4	0.5	None			None	None		None	None	MCBS,	Maximum	H	H	L
E	0.5	0.6	None			None	None		None	None	MCBS,	Maximum	H	H	L
E	0.6	0.7	None			None	None		None	None	MCBS,	Maximum	H	H	L
E	0.7	0.8	None			None	None		None	None	MCBS,	Maximum	H	H	L
E	0.8	0.9	None			None	None		None	None	MCBS,	Maximum	H	H	L
E	0.9	1	None			None	None		None	None	MCBS,	Maximum	H	H	L
E	1	1.1	None			None	None		None	None	MCBS,	Maximum	H	H	L
E	1.1	1.2	None			None	None		None	None	MCBS,	Maximum	H	H	L
E	1.2	1.3	None			None	None		None	None	MCBS,	Maximum	H	H	L
E	1.3	1.4	None			None	None		None	None	MCBS,	Maximum	H	H	L
E	1.4	1.5	None			None	None		None	None	MCBS,	Maximum	H	H	L
E	1.5	1.6	None			None	None		None	None	MCBS,	Maximum	H	H	L
E	1.6	1.7	None			None	None		None	None	Ag,MCBS,	Maximum	H	H	L
E	1.7	1.8	None			None	None		None	None	Ag,MCBS,	Maximum	H	H	L
E	1.8	1.9	None			None	None		None	None	Ag,	Minimal	L	M	L
E	1.9	2	None			None	None		None	None	Ag,MCBS,	Maximum	H	H	L
E	2	2.1	None			None	None		None	None	Ag,MCBS,	Maximum	H	H	L
E	2.1	2.2	None			None	None		None	None	Ag,MCBS,	Maximum	H	H	L
E	2.2	2.3	None			None	None		None	None	Ag,MCBS,	Maximum	H	H	L
E	2.3	2.4	None			None	None		None	None	Ag,MCBS,	Maximum	H	H	L
E	2.4	2.5	None			None	None		None	None	Ag,	Minimal	L	M	L
E	2.5	2.6	None			None	None		None	None	Ag,	Minimal	L	M	L
E	2.6	2.7	None			None	None		None	None	Ag,	Minimal	L	M	L
E	2.7	2.8	None			None	None		None	None	Ag,	Minimal	L	M	L
E	2.8	2.9	None			None	None		None	None	Ag,	Minimal	L	M	L
E	2.9	3	None			None	None		None	None	Ag,	Minimal	L	M	L
E	3	3.1	None			None	None		None	None	Ag,	Minimal	L	M	L
E	3.1	3.2	None			None	None		None	None	Ag,	Minimal	L	M	L
E	3.2	3.3	None			None	None		None	None	Ag,	Minimal	L	M	L
E	3.3	3.4	None			None	None		None	None	Ag,	Minimal	L	M	L
E	3.4	3.5	None			None	None		None	None	Ag,	Minimal	L	M	L
E	3.5	3.6	None			None	None		None	None	Ag,	Minimal	L	M	L
E	3.6	3.7	None			None	None		None	None	Ag,	Minimal	L	M	L
E	3.7	3.8	None			None	None		None	None	Ag,	Minimal	L	M	L
E	3.8	3.9	None			None	None		None	None	Ag,	Minimal	L	M	L
E	3.9	4	None			None	None		None	None	Ag,	Minimal	L	M	L
E	4	4.1	None			None	None		None	None	Ag,	Minimal	L	M	L
E	4.1	4.2	None			None	None		None	None	Ag,	Minimal	L	M	L
E	4.2	4.3	None			None	None		None	None	Ag,	Minimal	L	M	L
E	4.3	4.4	None			None	None		None	None	Ag,	Minimal	L	M	L
E	4.4	4.5	None			None	None		None	None	Ag,	Minimal	L	M	L
E	4.5	4.6	None			None	None		None	None	Ag,	Minimal	L	M	L
E	4.6	4.7	None			None	None		None	None	Ag,	Minimal	L	M	L

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
D	32.1	32.2	1	67.1	67.2	None	None		None	None	CC,	Moderate	H	H	M
D	32.2	32.3	1	67.2	67.3	None	None		None	None	CC,	Moderate	H	H	M
D	32.3	32.4	1	67.3	67.4	None	None		None	None	CC,	Moderate	H	H	M
D	32.4	32.5	1	67.4	67.5	None	None		None	None	CC,	Moderate	H	H	M
D	32.5	32.6	1	67.5	67.6	None	None		None	None	CC,	Moderate	H	H	M
D	32.6	32.7	1	67.6	67.7	None	None		None	None	CC,	Moderate	H	H	M
D	32.7	32.8	1	67.7	67.8	None	None		None	None	CC,	Moderate	H	H	M
D	32.8	32.9	1	67.8	67.9	None	None		None	None	CC,	Moderate	H	H	M
D	32.9	33	1	67.9	68	None	None		None	None	CC,	Moderate	H	H	M
D	33	33.1	1	68	68.1	None	None		None	None	CC,	Moderate	H	H	M
D	33.1	33.2	1	68.1	68.2	None	None		None	None	CC,	Moderate	H	H	M
D	33.2	33.3	1	68.2	68.3	None	None		None	None	CC,	Moderate	H	H	M
D	33.3	33.4	1	68.3	68.4	None	None		None	None	CC,	Moderate	H	H	M
D	33.4	33.5	1	68.4	68.5	None	None		None	None	CC,	Moderate	H	H	M
D	33.5	33.6	1	68.5	68.6	None	None		None	None	CC,	Moderate	H	H	M
D	33.6	33.7	1	68.6	68.7	None	None		None	None	CC,	Moderate	H	H	M
D	33.7	33.8	1	68.7	68.8	None	None		None	None	CC,	Moderate	H	H	M
D	33.8	33.9	1	68.8	68.9	None	None		None	None	CC,	Moderate	H	H	M
D	33.9	34	1	68.9	69	None	None		None	None	CC,	Moderate	H	H	M
D	34	34.1	1	69	69.1	None	None		None	None	CC,	Moderate	H	H	M
D	34.1	34.2	1	69.1	69.2	None	None		None	None	CC,	Moderate	H	H	M
D	34.2	34.3	1	69.2	69.3	None	None		None	None	CC,	Moderate	H	H	M
D	34.3	34.4	1	69.3	69.4	None	None		None	None	CC,	Moderate	H	H	M
D	34.4	34.5	1	69.4	69.5	None	None		None	None	CC,	Moderate	H	H	M
D	34.5	34.6	1	69.5	69.6	None	None		None	None	CC,	Moderate	H	H	M
D	34.6	34.7	1	69.6	69.7	None	None		None	None	CC,	Moderate	H	H	M
D	34.7	34.8	1	69.7	69.8	None	None		None	None	CC,	Moderate	H	H	H
D	34.8	34.9	1	69.8	69.9	None	None		None	None	CC,	Moderate	H	H	H
D	34.9	35	1	69.9	70	None	None		None	None	CC,	Moderate	H	H	H
D	35	35.1	1	70	70.1	None	None		VOW	None	CC,	Maximum	H	H	H
D	35.1	35.2	1	70.1	70.2	None	None		VOW	None	CC,RSS,	Maximum	H	H	H
D	35.2	35.3	1	70.2	70.3	None	None		VOW	None	CC,RSS,	Maximum	H	H	H
D	35.3	35.4	1	70.3	70.4	None	None		VOW	None	RSS,	Maximum	H	H	H
D	35.4	35.5	1	70.4	70.5	None	None		VOW	None	RSS,	Maximum	H	H	H
D	35.5	35.6	1	70.5	70.6	None	None		None	None	CC,RSS,	Maximum	H	H	H
D	35.6	35.7	1	70.6	70.7	None	None		None	None	CC,RSS,	Maximum	H	H	H
D	35.7	35.8	1	70.7	70.8	None	None		None	None	RSS,	Maximum	H	H	H
D	35.8	35.9	1	70.8	70.9	None	None		None	None	RSS,	Maximum	H	H	H
D	35.9	36	1	70.9	71	None	None		VOW	None	RSS,	Maximum	H	H	H
D	36	36.1	1	71	71.1	None	None		VOW	None	RSS,	Maximum	H	H	H
D	36.1	36.2	1	71.1	71.2	None	None		None	None	RSS,	Maximum	H	H	H
D	36.2	36.3	1	71.2	71.3	None	None		None	None	RSS,	Maximum	H	H	L
D	36.3	36.4	1	71.3	71.4	None	None		None	None	RSS,	Maximum	H	H	L
D	36.4	36.5	1	71.4	71.5	None	None		None	None	RSS,	Maximum	H	H	L
D	36.5	36.6	1	71.5	71.6	None	None		None	None	RSS,	Maximum	H	H	L
D	36.6	36.7	1	71.6	71.7	None	None		None	None	RSS,	Maximum	H	H	L
D	36.7	36.8	1	71.7	71.8	None	None		None	None	RSS,	Maximum	H	H	L
D	36.8	36.9	1	71.8	71.9	None	None		None	None	CC,RSS,	Maximum	H	H	L
D	36.9	37	1	71.9	72	None	None		None	None	CC,RSS,	Maximum	H	H	L
D	37	37.1	1	72	72.1	None	None		None	None	CC,	Moderate	H	H	L
D	37.1	37.2	1	72.1	72.2	None	None		None	None	CC,RSS,	Maximum	H	H	L
D	37.2	37.3	1	72.2	72.3	None	None		None	None	CC,RSS,	Maximum	H	H	L

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
D	37.3	37.4	1	72.3	72.4	None	None		None	None	CC,RSS,	Maximum	H	H	L
D	37.4	37.5	1	72.4	72.5	None	None		None	None	CC,RSS,	Maximum	H	H	L
D	37.5	37.6	1	72.5	72.6	None	None		None	None	CC,RSS,	Maximum	H	H	L
D	37.6	37.7	1	72.6	72.7	None	None		None	None	CC,RSS,	Maximum	H	H	L
D	37.7	37.8	1	72.7	72.8	None	None		None	None	CC,RSS,	Maximum	H	H	L
D	37.8	37.9	1	72.8	72.9	None	None		None	None	CC,RSS,	Maximum	H	H	L
D	37.9	38	1	72.9	73	None	None		None	None	CC,RSS,	Maximum	H	H	L
D	38	38.1	1	73	73.1	None	None		None	None	CC,RSS,	Maximum	H	H	L
D	38.1	38.2	1	73.1	73.2	None	None		None	None	CC,RSS,	Maximum	H	H	L
D	38.2	38.3	1	73.2	73.3	None	None		None	None	RSS,	Maximum	H	H	L
D	38.3	38.4	1	73.3	73.4	None	None		None	None	RSS,	Maximum	H	H	L
D	38.4	38.5	1	73.4	73.5	None	None		None	None	RSS,	Maximum	H	H	L
D	38.5	38.6	1	73.5	73.6	None	None		None	None	RSS,	Maximum	H	H	L
D	38.6	38.7	1	73.6	73.7	None	None		None	None	RSS,	Maximum	H	H	L
D	38.7	38.8	1	73.7	73.8	None	None		None	None	RSS,	Maximum	H	H	L
D	38.8	38.9	1	73.8	73.9	None	None		None	None	RSS,	Maximum	H	H	L
D	38.9	39	1	73.9	74	None	None		None	None	RSS,	Maximum	H	H	L
D	39	39.1	1	74	74.1	None	None		None	None	RSS,	Maximum	H	H	L
D	39.1	39.2	1	74.1	74.2	None	None		None	None	RSS,	Maximum	H	H	L
D	39.2	39.3	1	74.2	74.3	None	None		None	None	RSS,	Maximum	H	H	L
D	39.3	39.4	1	74.3	74.4	None	None		None	None	RSS,	Maximum	H	H	L
D	39.4	39.5	1	74.4	74.5	None	None		None	None	RSS,	Maximum	H	H	L
D	39.5	39.6	1	74.5	74.6	None	None		None	None	RSS,	Maximum	H	H	L
D	39.6	39.7	1	74.6	74.7	None	None		None	None	RSS,	Maximum	H	H	L
D	39.7	39.8	1	74.7	74.8	None	None		None	None	RSS,	Maximum	H	H	L
D	39.8	39.9	1	74.8	74.9	None	None		None	None	RSS,	Maximum	H	H	L
D	39.9	40	1	74.9	75	None	None		None	None	RSS,	Maximum	H	H	L
D	40	40.1	1	75	75.1	None	None		None	None	RSS,	Maximum	H	H	L
D	40.1	40.2	1	75.1	75.2	None	None		None	None	RSS,	Maximum	H	H	L
D	40.2	40.3	1	75.2	75.3	None	None		None	None	RSS,	Maximum	H	H	L
D	40.3	40.4	1	75.3	75.4	None	None		None	Castaic Lake SRA	RSS,	Maximum	H	H	L
D	40.4	40.5	1	75.4	75.5	None	None		None	Castaic Lake SRA	RSS,	Maximum	H	H	L
D	40.5	40.6	1	75.5	75.6	None	None		None	Castaic Lake SRA	RSS,	Maximum	H	H	L
D	40.6	40.7	1	75.6	75.7	None	None		None	Castaic Lake SRA	RSS,	Maximum	H	H	L
D	40.7	40.8	1	75.7	75.8	None	None		None	Castaic Lake SRA	RSS,	Maximum	H	H	L
D	40.8	40.9	1	75.8	75.9	None	None		None	Castaic Lake SRA	RSS,	Maximum	H	H	L
D	40.9	41	1	75.9	76	None	None		None	Castaic Lake SRA	RSS,	Maximum	H	H	L
D	41	41.1	1	76	76.1	None	None		None	Castaic Lake SRA	RSS,	Maximum	H	H	L
D	41.1	41.2	1	76.1	76.2	None	None		None	Castaic Lake SRA	RSS,	Maximum	H	H	L
D	41.2	41.3	1	76.2	76.3	None	None		None	Castaic Lake SRA	RSS,	Maximum	H	H	L
D	41.3	41.4	1	76.3	76.4	None	None		None	Castaic Lake SRA	RSS,	Maximum	H	H	L
D	41.4	41.5	1	76.4	76.5	None	None		None	Castaic Lake SRA	RSS,	Maximum	H	H	L
D	41.5	41.6	1	76.5	76.6	None	None		None	Castaic Lake SRA	RSS,	Maximum	H	H	H
D	41.6	41.7	1	76.6	76.7	None	None		None	Castaic Lake SRA	RSS,	Maximum	H	H	L
D	41.7	41.8	1	76.7	76.8	None	None		None	None	DD,RSS,	Maximum	H	H	L
D	41.8	41.9	1	76.8	76.9	None	None		None	None	DD,RSS,	Maximum	H	H	L
D	41.9	42	1	76.9	77	None	None		None	None	DD,RSS,	Maximum	H	H	L
D	42	42.1	1	77	77.1	None	None		None	None	RSS,	Maximum	H	H	L
D	42.1	42.2	1	77.1	77.2	None	None		None	None	RSS,	Maximum	H	H	L
D	42.2	42.3	1	77.2	77.3	None	None		None	None	RSS,	Maximum	H	H	L
D	42.3	42.4	1	77.3	77.4	None	None		None	None	RSS,	Maximum	H	H	L
D	42.4	42.5	1	77.4	77.5	None	None		None	None	CC,RSS,	Maximum	H	H	L

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
D	21.7	21.8	1	56.7	56.8	None	None		None	San Andreas Rift Zone SEA	SMC,	Maximum	H	H	M
D	21.8	21.9	1	56.8	56.9	None	None		None	San Andreas Rift Zone SEA	SMC,	Maximum	H	H	M
D	21.9	22	1	56.9	57	None	None		None	San Andreas Rift Zone SEA	SMC,	Maximum	H	H	M
D	22	22.1	1	57	57.1	None	None		None	San Andreas Rift Zone SEA	SMC,	Maximum	H	H	M
D	22.1	22.2	1	57.1	57.2	None	None		None	San Andreas Rift Zone SEA	SMC,	Maximum	H	H	M
D	22.2	22.3	1	57.2	57.3	None	None		None	San Andreas Rift Zone SEA	SMC,	Maximum	H	H	M
D	22.3	22.4	1	57.3	57.4	None	None		None	San Andreas Rift Zone SEA	SMC,	Maximum	H	H	M
D	22.4	22.5	1	57.4	57.5	None	None		None	San Andreas Rift Zone SEA	SMC,	Maximum	H	H	M
D	22.5	22.6	1	57.5	57.6	None	None		None	None	SMC,	Moderate	M	M	L
D	22.6	22.7	1	57.6	57.7	None	None		None	None	SMC,	Moderate	M	M	L
D	22.7	22.8	1	57.7	57.8	None	None		None	None	SMC,	Moderate	M	M	L
D	22.8	22.9	1	57.8	57.9	None	None		None	None	SMC,	Moderate	M	M	L
D	22.9	23	1	57.9	58	None	None		None	None	SMC,	Moderate	M	M	L
D	23	23.1	1	58	58.1	None	None		None	None	SMC,	Moderate	M	M	L
D	23.1	23.2	1	58.1	58.2	None	None		None	None	SMC,	Moderate	H	H	H
D	23.2	23.3	1	58.2	58.3	None	None		None	None	SMC,	Moderate	H	H	H
D	23.3	23.4	1	58.3	58.4	None	Maximum		None	None	SMC,	Moderate	H	H	H
D	23.4	23.5	1	58.4	58.5	None	None		None	None	SMC,	Moderate	H	H	M
D	23.5	23.6	1	58.5	58.6	None	Maximum		None	None	SMC,	Moderate	H	H	H
D	23.6	23.7	1	58.6	58.7	None	None		None	None	SMC,	Moderate	H	H	H
D	23.7	23.8	1	58.7	58.8	None	None		None	None	SMC,	Moderate	H	H	M
D	23.8	23.9	1	58.8	58.9	None	Maximum		None	None	SMC,	Moderate	H	H	H
D	23.9	24	1	58.9	59	None	None		None	None	SMC,	Moderate	H	H	H
D	24	24.1	1	59	59.1	None	Maximum		None	None	SMC,	Moderate	H	H	H
D	24.1	24.2	1	59.1	59.2	None	None		None	None	SMC,	Moderate	H	H	H
D	24.2	24.3	1	59.2	59.3	None	None		None	None	SMC,	Moderate	H	H	H
D	24.3	24.4	1	59.3	59.4	None	None		None	None	SMC,	Moderate	H	H	H
D	24.4	24.5	1	59.4	59.5	None	None		None	None	SMC,	Moderate	H	H	H
D	24.5	24.6	1	59.5	59.6	None	None		None	None	SMC,	Moderate	H	H	H
D	24.6	24.7	1	59.6	59.7	None	None		None	None	SMC,	Moderate	H	H	H
D	24.7	24.8	1	59.7	59.8	None	None		None	None	SMC,	Moderate	H	H	H
D	24.8	24.9	1	59.8	59.9	None	None		None	None	SMC,	Moderate	H	H	M
D	24.9	25	1	59.9	60	None	None		None	None	SMC,	Moderate	H	H	M
D	25	25.1	1	60	60.1	None	None		None	None	SMC,	Moderate	H	H	M
D	25.1	25.2	1	60.1	60.2	None	None		None	None	SMC,	Moderate	H	H	M
D	25.2	25.3	1	60.2	60.3	None	None		None	None	SMC,	Moderate	H	H	M
D	25.3	25.4	1	60.3	60.4	None	None		None	None	SMC,	Moderate	H	H	M
D	25.4	25.5	1	60.4	60.5	None	None		None	None	SMC,	Moderate	H	H	M
D	25.5	25.6	1	60.5	60.6	None	None		None	None	SMC,	Moderate	H	H	M
D	25.6	25.7	1	60.6	60.7	None	None		None	None	SMC,	Moderate	H	H	M
D	25.7	25.8	1	60.7	60.8	None	None		None	None	SMC,	Moderate	H	H	M
D	25.8	25.9	1	60.8	60.9	None	None		None	None	SMC,	Moderate	H	H	M
D	25.9	26	1	60.9	61	None	None		None	None	SMC,	Moderate	H	H	M
D	26	26.1	1	61	61.1	None	None		None	None	SMC,	Moderate	H	H	M
D	26.1	26.2	1	61.1	61.2	None	None		None	None	SMC,	Moderate	H	H	M
D	26.2	26.3	1	61.2	61.3	None	None		None	None	SMC,	Moderate	H	H	M
D	26.3	26.4	1	61.3	61.4	None	None		None	None	SMC,	Moderate	H	H	M
D	26.4	26.5	1	61.4	61.5	None	None		None	None	SMC,	Moderate	H	H	M
D	26.5	26.6	1	61.5	61.6	None	None		SWC	None	SMC,	Maximum	H	H	M
D	26.6	26.7	1	61.6	61.7	None	None		SWC	None	SMC,	Maximum	H	H	H
D	26.7	26.8	1	61.7	61.8	None	None		SWC	None	SMC,	Maximum	H	H	H
D	26.8	26.9	1	61.8	61.9	None	None		SWC	None	SMC,	Maximum	H	H	H

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
D	26.9	27	1	61.9	62	None	None		SWC,	None	SMC,	Maximum	H	H	H
D	27	27.1	1	62	62.1	None	None		None	None	SMC,	Moderate	H	H	H
D	27.1	27.2	1	62.1	62.2	None	None		None	None	SMC,	Moderate	H	H	M
D	27.2	27.3	1	62.2	62.3	None	None		None	None	SMC,	Moderate	H	H	M
D	27.3	27.4	1	62.3	62.4	None	None		None	None	SMC,	Moderate	H	H	M
D	27.4	27.5	1	62.4	62.5	None	None		None	None	SMC,	Moderate	H	H	M
D	27.5	27.6	1	62.5	62.6	None	None		None	None	SMC,	Moderate	H	H	M
D	27.6	27.7	1	62.6	62.7	None	None		None	None	SMC,	Moderate	H	H	M
D	27.7	27.8	1	62.7	62.8	None	None		None	None	SMC,	Moderate	H	H	M
D	27.8	27.9	1	62.8	62.9	None	None		None	None	SMC,	Moderate	H	H	M
D	27.9	28	1	62.9	63	None	None		None	None	SMC,	Moderate	H	H	M
D	28	28.1	1	63	63.1	None	None		None	None	SMC,	Moderate	H	H	M
D	28.1	28.2	1	63.1	63.2	None	None		None	None	SMC,	Moderate	H	H	M
D	28.2	28.3	1	63.2	63.3	None	None		None	None	SMC,	Moderate	H	H	M
D	28.3	28.4	1	63.3	63.4	None	None		None	None	SMC,	Moderate	H	H	M
D	28.4	28.5	1	63.4	63.5	None	None		None	None	SMC,	Moderate	H	H	M
D	28.5	28.6	1	63.5	63.6	None	None		None	None	SMC,	Moderate	H	H	M
D	28.6	28.7	1	63.6	63.7	None	None		None	None	SMC,	Moderate	H	H	M
D	28.7	28.8	1	63.7	63.8	None	None		None	None	SMC,	Moderate	H	H	M
D	28.8	28.9	1	63.8	63.9	None	None		None	None	SMC,	Moderate	H	H	M
D	28.9	29	1	63.9	64	None	None		None	None	SMC,	Moderate	H	H	M
D	29	29.1	1	64	64.1	None	None		None	None	SMC,	Moderate	H	H	M
D	29.1	29.2	1	64.1	64.2	None	None		None	None	CC,SMC,	Moderate	H	H	M
D	29.2	29.3	1	64.2	64.3	None	None		None	None	CC,SMC,	Moderate	H	H	M
D	29.3	29.4	1	64.3	64.4	None	None		None	None	CC,	Moderate	H	H	M
D	29.4	29.5	1	64.4	64.5	None	None		None	None	CC,	Moderate	H	H	M
D	29.5	29.6	1	64.5	64.6	None	None		None	None	CC,	Moderate	H	H	M
D	29.6	29.7	1	64.6	64.7	None	None		None	None	CC,	Moderate	H	H	M
D	29.7	29.8	1	64.7	64.8	None	None		None	None	CC,	Moderate	H	H	M
D	29.8	29.9	1	64.8	64.9	None	None		None	None	CC,	Moderate	H	H	M
D	29.9	30	1	64.9	65	None	None		None	None	CC,	Moderate	H	H	M
D	30	30.1	1	65	65.1	None	None		None	None	CC,	Moderate	H	H	M
D	30.1	30.2	1	65.1	65.2	None	None		None	None	CC,	Moderate	H	H	M
D	30.2	30.3	1	65.2	65.3	None	None		None	None	CC,	Moderate	H	H	H
D	30.3	30.4	1	65.3	65.4	None	None		None	None	CC,	Moderate	H	H	M
D	30.4	30.5	1	65.4	65.5	None	None		None	None	CC,	Moderate	H	H	M
D	30.5	30.6	1	65.5	65.6	None	None		None	None	CC,	Moderate	H	H	M
D	30.6	30.7	1	65.6	65.7	None	None		None	None	CC,	Moderate	H	H	M
D	30.7	30.8	1	65.7	65.8	None	None		None	None	CC,	Moderate	H	H	M
D	30.8	30.9	1	65.8	65.9	None	None		None	None	CC,	Moderate	H	H	M
D	30.9	31	1	65.9	66	None	None		None	None	CC,	Moderate	H	H	M
D	31	31.1	1	66	66.1	None	None		None	None	CC,	Moderate	H	H	M
D	31.1	31.2	1	66.1	66.2	None	None		None	None	CC,	Moderate	H	H	M
D	31.2	31.3	1	66.2	66.3	None	None		None	None	CC,	Moderate	H	H	M
D	31.3	31.4	1	66.3	66.4	None	None		None	None	CC,	Moderate	H	H	M
D	31.4	31.5	1	66.4	66.5	None	None		None	None	CC,	Moderate	H	H	M
D	31.5	31.6	1	66.5	66.6	None	None		None	None	CC,	Moderate	H	H	M
D	31.6	31.7	1	66.6	66.7	None	None		None	None	CC,	Moderate	H	H	M
D	31.7	31.8	1	66.7	66.8	None	None		None	None	CC,	Moderate	H	H	M
D	31.8	31.9	1	66.8	66.9	None	None		None	None	CC,	Moderate	H	H	M
D	31.9	32	1	66.9	67	None	None		None	None	CC,	Moderate	H	H	M
D	32	32.1	1	67	67.1	None	None		None	None	CC,	Moderate	H	H	M

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
D	11.3	11.4	1	46.3	46.4	None	None		None	None	Ag,AnGr,	Moderate	M	M	L
D	11.4	11.5	1	46.4	46.5	None	None		None	None	Ag,AnGr,DD,	Moderate	M	M	L
D	11.5	11.6	1	46.5	46.6	None	None		None	None	Ag,AnGr,DD,	Moderate	M	M	L
D	11.6	11.7	1	46.6	46.7	None	None		None	None	AnGr,DD,	Moderate	M	M	L
D	11.7	11.8	1	46.7	46.8	None	None		None	None	AnGr,DD,	Moderate	M	M	L
D	11.8	11.9	1	46.8	46.9	None	None		None	None	AnGr,DD,	Moderate	M	M	L
D	11.9	12	1	46.9	47	None	None		None	None	AnGr,DD,	Moderate	M	M	L
D	12	12.1	1	47	47.1	None	None		None	None	AnGr,DD,	Moderate	M	M	L
D	12.1	12.2	1	47.1	47.2	None	None		None	None	AnGr,DD,	Moderate	M	M	L
D	12.2	12.3	1	47.2	47.3	None	None		None	None	AnGr,DD,	Moderate	M	M	L
D	12.3	12.4	1	47.3	47.4	None	None		None	None	AnGr,DD,	Moderate	M	M	L
D	12.4	12.5	1	47.4	47.5	None	None		None	None	AnGr,DD,	Moderate	M	M	L
D	12.5	12.6	1	47.5	47.6	None	None		None	None	AnGr,DD,	Moderate	M	M	L
D	12.6	12.7	1	47.6	47.7	None	None		None	None	AnGr,	Moderate	M	M	L
D	12.7	12.8	1	47.7	47.8	None	None		None	None	AnGr,	Moderate	M	M	L
D	12.8	12.9	1	47.8	47.9	None	None		None	None	AnGr,	Moderate	M	M	L
D	12.9	13	1	47.9	48	None	None		None	None	AnGr,	Moderate	M	M	L
D	13	13.1	1	48	48.1	None	None		None	None	AnGr,	Moderate	M	M	L
D	13.1	13.2	1	48.1	48.2	None	None		None	None	AnGr,	Moderate	M	M	L
D	13.2	13.3	1	48.2	48.3	None	None		None	None	AnGr,	Moderate	M	M	L
D	13.3	13.4	1	48.3	48.4	None	None		None	None	AnGr,	Moderate	M	M	L
D	13.4	13.5	1	48.4	48.5	None	None		None	None	AnGr,	Moderate	M	M	L
D	13.5	13.6	1	48.5	48.6	None	None		None	None	AnGr,	Moderate	M	M	L
D	13.6	13.7	1	48.6	48.7	None	None		None	None	AnGr,	Maximum	H	H	L
D	13.7	13.8	1	48.7	48.8	None	None		None	None	AnGr,	Moderate	M	M	L
D	13.8	13.9	1	48.8	48.9	None	None		None	None	AnGr,	Moderate	M	M	L
D	13.9	14	1	48.9	49	None	None		None	None	AnGr,	Moderate	M	M	L
D	14	14.1	1	49	49.1	None	None		None	None	AnGr,	Moderate	M	M	L
D	14.1	14.2	1	49.1	49.2	None	None		None	None	AnGr,	Moderate	M	M	L
D	14.2	14.3	1	49.2	49.3	None	None		None	None	AnGr,	Moderate	M	M	L
D	14.3	14.4	1	49.3	49.4	None	None		None	None	AnGr,	Moderate	M	M	L
D	14.4	14.5	1	49.4	49.5	None	None		None	None	AnGr,	Moderate	M	M	L
D	14.5	14.6	1	49.5	49.6	None	None		None	None	AnGr,	Moderate	M	M	L
D	14.6	14.7	1	49.6	49.7	None	None		None	None	AnGr,DD,	Moderate	M	M	L
D	14.7	14.8	1	49.7	49.8	None	None		None	San Andreas Rift Zone SEA	AnGr,DD,	Moderate	M	H	M
D	14.8	14.9	1	49.8	49.9	None	None		None	San Andreas Rift Zone SEA	AnGr,DD,	Moderate	M	H	M
D	14.9	15	1	49.9	50	None	None		None	San Andreas Rift Zone SEA	AnGr,DD,	Moderate	M	H	M
D	15	15.1	1	50	50.1	None	None		None	San Andreas Rift Zone SEA	AnGr,DD,	Moderate	M	H	M
D	15.1	15.2	1	50.1	50.2	None	None		None	San Andreas Rift Zone SEA	AnGr,DD,	Moderate	M	H	M
D	15.2	15.3	1	50.2	50.3	None	None		None	San Andreas Rift Zone SEA	AnGr,DD,	Moderate	M	H	M
D	15.3	15.4	1	50.3	50.4	None	None		None	San Andreas Rift Zone SEA	AnGr,DD,	Moderate	M	H	M
D	15.4	15.5	1	50.4	50.5	None	None		None	San Andreas Rift Zone SEA	AnGr,DD,	Moderate	M	H	M
D	15.5	15.6	1	50.5	50.6	None	None		None	San Andreas Rift Zone SEA	AnGr,DD,	Moderate	M	H	M
D	15.6	15.7	1	50.6	50.7	None	None		None	San Andreas Rift Zone SEA	AnGr,DD,	Moderate	M	H	M
D	15.7	15.8	1	50.7	50.8	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	15.8	15.9	1	50.8	50.9	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	15.9	16	1	50.9	51	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	16	16.1	1	51	51.1	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	16.1	16.2	1	51.1	51.2	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	16.2	16.3	1	51.2	51.3	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	16.3	16.4	1	51.3	51.4	None	None		None	San Andreas Rift Zone SEA	AnGr,SMC,	Moderate	M	H	M
D	16.4	16.5	1	51.4	51.5	None	None		None	San Andreas Rift Zone SEA	AnGr,SMC,	Moderate	M	H	M

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
D	16.5	16.6	1	51.5	51.6	None	None		None	San Andreas Rift Zone SEA	AnGr,SMC,	Moderate	M	H	M
D	16.6	16.7	1	51.6	51.7	None	Minimal	L	None	San Andreas Rift Zone SEA	AnGr,SMC,	Moderate	M	H	M
D	16.7	16.8	1	51.7	51.8	None	Minimal	L	None	San Andreas Rift Zone SEA	SMC,	Moderate	M	H	M
D	16.8	16.9	1	51.8	51.9	None	Minimal	L	None	San Andreas Rift Zone SEA	AnGr,SMC,	Moderate	M	H	M
D	16.9	17	1	51.9	52	None	Minimal	L	None	San Andreas Rift Zone SEA	AnGr,SMC,	Moderate	M	H	M
D	17	17.1	1	52	52.1	None	Minimal	L	None	San Andreas Rift Zone SEA	AnGr,SMC,	Moderate	M	H	M
D	17.1	17.2	1	52.1	52.2	None	Minimal	L	None	San Andreas Rift Zone SEA	AnGr,SMC,	Moderate	M	H	M
D	17.2	17.3	1	52.2	52.3	None	Minimal	L	None	San Andreas Rift Zone SEA	AnGr,SMC,	Moderate	M	H	M
D	17.3	17.4	1	52.3	52.4	None	Minimal	L	None	San Andreas Rift Zone SEA	AnGr,SMC,	Moderate	M	H	M
D	17.4	17.5	1	52.4	52.5	None	Minimal	L	None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	17.5	17.6	1	52.5	52.6	None	Minimal	L	None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	17.6	17.7	1	52.6	52.7	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	17.7	17.8	1	52.7	52.8	None	Minimal	L	None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	17.8	17.9	1	52.8	52.9	None	Minimal	L	None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	17.9	18	1	52.9	53	None	Minimal	L	None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	18	18.1	1	53	53.1	None	Minimal	L	None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	18.1	18.2	1	53.1	53.2	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	18.2	18.3	1	53.2	53.3	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	18.3	18.4	1	53.3	53.4	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	18.4	18.5	1	53.4	53.5	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	18.5	18.6	1	53.5	53.6	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	18.6	18.7	1	53.6	53.7	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	18.7	18.8	1	53.7	53.8	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	18.8	18.9	1	53.8	53.9	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	18.9	19	1	53.9	54	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	19	19.1	1	54	54.1	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	19.1	19.2	1	54.1	54.2	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	19.2	19.3	1	54.2	54.3	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	19.3	19.4	1	54.3	54.4	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	19.4	19.5	1	54.4	54.5	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	19.5	19.6	1	54.5	54.6	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	19.6	19.7	1	54.6	54.7	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	19.7	19.8	1	54.7	54.8	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	19.8	19.9	1	54.8	54.9	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	19.9	20	1	54.9	55	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	20	20.1	1	55	55.1	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	20.1	20.2	1	55.1	55.2	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	20.2	20.3	1	55.2	55.3	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	20.3	20.4	1	55.3	55.4	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	20.4	20.5	1	55.4	55.5	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	20.5	20.6	1	55.5	55.6	None	None		None	San Andreas Rift Zone SEA	AnGr,	Moderate	M	H	M
D	20.6	20.7	1	55.6	55.7	None	None		None	San Andreas Rift Zone SEA	AnGr,SOC,SMC,	Moderate	M	H	M
D	20.7	20.8	1	55.7	55.8	None	None		None	San Andreas Rift Zone SEA	SOC,SMC,	Moderate	M	H	M
D	20.8	20.9	1	55.8	55.9	None	None		None	San Andreas Rift Zone SEA	SMC,	Maximum	H	H	M
D	20.9	21	1	55.9	56	None	None		None	San Andreas Rift Zone SEA	SMC,	Maximum	H	H	M
D	21	21.1	1	56	56.1	None	None		None	San Andreas Rift Zone SEA	SMC,	Maximum	H	H	M
D	21.1	21.2	1	56.1	56.2	None	None		None	San Andreas Rift Zone SEA	SMC,	Maximum	H	H	M
D	21.2	21.3	1	56.2	56.3	None	None		None	San Andreas Rift Zone SEA	SMC,	Maximum	H	H	M
D	21.3	21.4	1	56.3	56.4	None	None		None	San Andreas Rift Zone SEA	SMC,	Maximum	H	H	M
D	21.4	21.5	1	56.4	56.5	None	None		None	San Andreas Rift Zone SEA	SMC,	Maximum	H	H	M
D	21.5	21.6	1	56.5	56.6	None	None		None	San Andreas Rift Zone SEA	SMC,	Maximum	H	H	M
D	21.6	21.7	1	56.6	56.7	None	None		None	San Andreas Rift Zone SEA	SMC,	Maximum	H	H	M

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
D	0.9	1	1	35.9	36	None	None		None	None	MCBS,	Maximum	H	H	L
D	1	1.1	1	36	36.1	None	None		None	None	MCBS,	Maximum	H	H	L
D	1.1	1.2	1	36.1	36.2	None	None		None	None	MCBS,	Maximum	H	H	L
D	1.2	1.3	1	36.2	36.3	None	None		None	None	MCBS,	Maximum	H	H	L
D	1.3	1.4	1	36.3	36.4	None	None		None	None	MCBS,	Maximum	H	H	L
D	1.4	1.5	1	36.4	36.5	None	None		None	None	MCBS,	Maximum	H	H	L
D	1.5	1.6	1	36.5	36.6	None	None		None	None	MCBS,	Maximum	H	H	L
D	1.6	1.7	1	36.6	36.7	None	None		None	None	MCBS,	Maximum	H	H	L
D	1.7	1.8	1	36.7	36.8	None	None		None	None	MCBS,	Maximum	H	H	L
D	1.8	1.9	1	36.8	36.9	None	None		None	None	MCBS,	Maximum	H	H	L
D	1.9	2	1	36.9	37	None	None		None	None	MCBS,	Maximum	H	H	L
D	2	2.1	1	37	37.1	None	None		None	None	MCBS,	Maximum	H	H	L
D	2.1	2.2	1	37.1	37.2	None	None		None	None	MCBS,	Maximum	H	H	L
D	2.2	2.3	1	37.2	37.3	None	None		None	None	AnGr,MCBS,	Maximum	H	H	L
D	2.3	2.4	1	37.3	37.4	None	None		None	None	AnGr,MCBS,	Maximum	H	H	L
D	2.4	2.5	1	37.4	37.5	None	None		None	None	AnGr,	Moderate	M	M	L
D	2.5	2.6	1	37.5	37.6	None	None		None	None	AnGr,	Moderate	M	M	L
D	2.6	2.7	1	37.6	37.7	None	None		None	None	AnGr,	Moderate	M	M	L
D	2.7	2.8	1	37.7	37.8	None	None		None	None	AnGr,	Moderate	M	M	L
D	2.8	2.9	1	37.8	37.9	None	None		None	None	AnGr,	Moderate	M	M	L
D	2.9	3	1	37.9	38	None	None		None	None	AnGr,	Moderate	M	M	L
D	3	3.1	1	38	38.1	None	None		None	None	AnGr,	Moderate	M	M	L
D	3.1	3.2	1	38.1	38.2	None	None		None	None	AnGr,	Moderate	M	M	L
D	3.2	3.3	1	38.2	38.3	None	None		None	None	AnGr,	Moderate	M	M	L
D	3.3	3.4	1	38.3	38.4	None	None		None	None	AnGr,	Moderate	M	M	L
D	3.4	3.5	1	38.4	38.5	None	None		None	None	AnGr,	Moderate	M	M	L
D	3.5	3.6	1	38.5	38.6	None	None		None	None	AnGr,	Moderate	M	M	L
D	3.6	3.7	1	38.6	38.7	None	None		None	None	AnGr,	Moderate	M	M	L
D	3.7	3.8	1	38.7	38.8	None	None		None	None	AnGr,MCBS,	Maximum	H	H	L
D	3.8	3.9	1	38.8	38.9	None	None		None	None	MCBS,	Maximum	H	H	L
D	3.9	4	1	38.9	39	None	None		None	None	MCBS,	Maximum	H	H	L
D	4	4.1	1	39	39.1	None	None		None	None	MCBS,	Maximum	H	H	L
D	4.1	4.2	1	39.1	39.2	None	None		None	None	MCBS,	Maximum	H	H	L
D	4.2	4.3	1	39.2	39.3	None	None		None	None	MCBS,	Maximum	H	H	L
D	4.3	4.4	1	39.3	39.4	None	None		None	None	MCBS,	Maximum	H	H	L
D	4.4	4.5	1	39.4	39.5	None	None		None	None	MCBS,	Maximum	H	H	L
D	4.5	4.6	1	39.5	39.6	None	None		None	None	MCBS,	Maximum	H	H	L
D	4.6	4.7	1	39.6	39.7	None	None		None	None	MCBS,	Maximum	H	H	L
D	4.7	4.8	1	39.7	39.8	None	None		None	None	MCBS,	Maximum	H	H	L
D	4.8	4.9	1	39.8	39.9	None	None		None	None	MCBS,	Maximum	H	H	L
D	4.9	5	1	39.9	40	None	None		None	None	MCBS,	Maximum	H	H	L
D	5	5.1	1	40	40.1	None	None		None	None	MCBS,	Maximum	H	H	L
D	5.1	5.2	1	40.1	40.2	None	None		None	None	MCBS,	Maximum	H	H	L
D	5.2	5.3	1	40.2	40.3	None	None		None	None	MCBS,	Maximum	H	H	L
D	5.3	5.4	1	40.3	40.4	None	None		None	None	MCBS,	Maximum	H	H	L
D	5.4	5.5	1	40.4	40.5	None	Maximum		None	None	JTW,MCBS,	Maximum	H	H	L
D	5.5	5.6	1	40.5	40.6	None	Maximum		None	None	JTW,MCBS,	Maximum	H	H	L
D	5.6	5.7	1	40.6	40.7	None	Maximum		None	None	JTW,MCBS,	Maximum	H	H	L
D	5.7	5.8	1	40.7	40.8	None	Maximum		None	None	JTW,MCBS,	Maximum	H	H	L
D	5.8	5.9	1	40.8	40.9	None	Maximum		None	None	JTW,MCBS,	Maximum	H	H	L
D	5.9	6	1	40.9	41	None	Maximum		None	None	JTW,MCBS,RbS,	Maximum	H	H	L
D	6	6.1	1	41	41.1	None	Maximum		None	None	JTW,RbS,	Maximum	H	H	L

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D	6.1	6.2	1	41.1	41.2	None	Maximum		None	None	JTW,RbS,	Maximum	H	H	L
D	6.2	6.3	1	41.2	41.3	None	Maximum		None	None	JTW,RbS,	Maximum	H	H	L
D	6.3	6.4	1	41.3	41.4	None	Maximum		None	None	AnGr,JTW,RbS,	Maximum	H	H	L
D	6.4	6.5	1	41.4	41.5	None	None		None	None	AnGr,RbS,	Moderate	M	M	L
D	6.5	6.6	1	41.5	41.6	None	None		None	None	AnGr,	Moderate	M	M	L
D	6.6	6.7	1	41.6	41.7	None	None		None	None	AnGr,	Moderate	M	M	L
D	6.7	6.8	1	41.7	41.8	None	None		None	None	AnGr,	Moderate	M	M	L
D	6.8	6.9	1	41.8	41.9	None	None		None	None	AnGr,	Moderate	M	M	L
D	6.9	7	1	41.9	42	None	None		None	None	AnGr,	Moderate	M	M	L
D	7	7.1	1	42	42.1	None	None		None	None	AnGr,	Moderate	M	M	L
D	7.1	7.2	1	42.1	42.2	None	Maximum		None	None	AnGr,JTW,RbS,	Maximum	H	H	L
D	7.2	7.3	1	42.2	42.3	None	None		None	None	RbS,	None	NI	M	L
D	7.3	7.4	1	42.3	42.4	None	None		None	None	RbS,	None	NI	M	L
D	7.4	7.5	1	42.4	42.5	None	None		None	None	RbS,	None	NI	H	M
D	7.5	7.6	1	42.5	42.6	None	None		None	None	RbS,	None	NI	H	M
D	7.6	7.7	1	42.6	42.7	None	None		None	None	RbS,	None	NI	H	M
D	7.7	7.8	1	42.7	42.8	None	None		None	None	RbS,	None	NI	H	M
D	7.8	7.9	1	42.8	42.9	None	None		None	None	RbS,	None	NI	H	M
D	7.9	8	1	42.9	43	None	Maximum		None	None	JTW,RbS,	Maximum	H	H	M
D	8	8.1	1	43	43.1	None	Maximum		None	None	JTW,	Maximum	H	H	M
D	8.1	8.2	1	43.1	43.2	None	Maximum		None	None	JTW,	Maximum	H	H	M
D	8.2	8.3	1	43.2	43.3	None	Maximum		None	None	JTW,	Maximum	H	H	M
D	8.3	8.4	1	43.3	43.4	None	Maximum		None	None	JTW,	Maximum	H	H	M
D	8.4	8.5	1	43.4	43.5	None	Maximum		None	None	AnGr,JTW,RbS,	Maximum	H	H	M
D	8.5	8.6	1	43.5	43.6	None	None		None	None	AnGr,RbS,	Moderate	M	H	M
D	8.6	8.7	1	43.6	43.7	None	None		None	None	AnGr,RbS,	Moderate	M	H	M
D	8.7	8.8	1	43.7	43.8	None	None		None	None	AnGr,RbS,	Moderate	M	H	M
D	8.8	8.9	1	43.8	43.9	None	None		None	None	AnGr,RbS,	Moderate	M	H	M
D	8.9	9	1	43.9	44	None	None		None	None	AnGr,RbS,	Moderate	M	H	M
D	9	9.1	1	44	44.1	None	None		None	None	AnGr,RbS,	Moderate	M	H	M
D	9.1	9.2	1	44.1	44.2	None	None		None	None	AnGr,RbS,	Moderate	M	H	M
D	9.2	9.3	1	44.2	44.3	None	None		None	None	AnGr,RbS,	Moderate	M	H	M
D	9.3	9.4	1	44.3	44.4	None	None		None	None	AnGr,RbS,	Moderate	M	H	M
D	9.4	9.5	1	44.4	44.5	None	None		None	None	AnGr,RbS,	Moderate	M	H	M
D	9.5	9.6	1	44.5	44.6	None	None		None	None	RbS,	None	NI	H	M
D	9.6	9.7	1	44.6	44.7	None	None		None	None	RbS,	None	NI	H	M
D	9.7	9.8	1	44.7	44.8	None	Maximum		None	None	JTW,RbS,	Maximum	H	H	M
D	9.8	9.9	1	44.8	44.9	None	Maximum		None	None	JTW,RbS,	Maximum	H	H	M
D	9.9	10	1	44.9	45	None	Maximum		None	None	JTW,RbS,	Maximum	H	H	M
D	10	10.1	1	45	45.1	None	Maximum		None	None	JTW,RbS,	Maximum	H	H	L
D	10.1	10.2	1	45.1	45.2	None	Maximum		None	None	JTW,RbS,	Maximum	H	H	L
D	10.2	10.3	1	45.2	45.3	None	Maximum		None	None	JTW,RbS,	Maximum	H	H	L
D	10.3	10.4	1	45.3	45.4	None	Maximum		None	None	JTW,RbS,	Maximum	H	H	L
D	10.4	10.5	1	45.4	45.5	None	Maximum		None	None	JTW,RbS,	Maximum	H	H	L
D	10.5	10.6	1	45.5	45.6	None	Maximum		None	None	JTW,	Maximum	H	H	L
D	10.6	10.7	1	45.6	45.7	None	Maximum		None	None	JTW,	Maximum	H	H	L
D	10.7	10.8	1	45.7	45.8	None	Maximum		None	None	JTW,	Maximum	H	H	L
D	10.8	10.9	1	45.8	45.9	None	Maximum		None	None	Ag,JTW,	Maximum	H	H	L
D	10.9	11	1	45.9	46	None	Maximum		None	None	Ag,AnGr,JTW,	Maximum	H	H	L
D	11	11.1	1	46	46.1	None	None		None	None	Ag,AnGr,	Moderate	M	M	L
D	11.1	11.2	1	46.1	46.2	None	None		None	None	Ag,AnGr,	Moderate	M	M	L
D	11.2	11.3	1	46.2	46.3	None	None		None	None	Ag,AnGr,	Moderate	M	M	L

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
C	12.2	12.3	1	25.5	25.6	None	None		None	None	MCBS,	Maximum	H	H	L
C	12.3	12.4	1	25.6	25.7	None	None		None	None	MCBS,	Maximum	H	H	L
C	12.4	12.5	1	25.7	25.8	None	None		None	None	MCBS,	Maximum	H	H	L
C	12.5	12.6	1	25.8	25.9	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	12.6	12.7	1	25.9	26	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	12.7	12.8	1	26	26.1	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	12.8	12.9	1	26.1	26.2	None	None		None	None	MCBS,	Maximum	H	H	L
C	12.9	13	1	26.2	26.3	None	None		None	None	MCBS,	Maximum	H	H	L
C	13	13.1	1	26.3	26.4	None	None		None	None	MCBS,	Maximum	H	H	L
C	13.1	13.2	1	26.4	26.5	None	None		None	None	MCBS,	Maximum	H	H	L
C	13.2	13.3	1	26.5	26.6	None	None		None	None	MCBS,	Maximum	H	H	L
C	13.3	13.4	1	26.6	26.7	None	None		None	None	MCBS,	Maximum	H	H	L
C	13.4	13.5	1	26.7	26.8	None	None		None	None	MCBS,	Maximum	H	H	L
C	13.5	13.6	1	26.8	26.9	None	None		None	None	MCBS,	Maximum	H	H	L
C	13.6	13.7	1	26.9	27	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	13.7	13.8	1	27	27.1	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	13.8	13.9	1	27.1	27.2	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	13.9	14	1	27.2	27.3	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	14	14.1	1	27.3	27.4	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	14.1	14.2	1	27.4	27.5	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	14.2	14.3	1	27.5	27.6	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	14.3	14.4	1	27.6	27.7	None	None		None	None	MCBS,	Maximum	H	H	L
C	14.4	14.5	1	27.7	27.8	None	None		None	None	MCBS,	Maximum	H	H	L
C	14.5	14.6	1	27.8	27.9	None	None		None	None	MCBS,	Maximum	H	H	L
C	14.6	14.7	1	27.9	28	None	None		None	None	MCBS,	Maximum	H	H	L
C	14.7	14.8	1	28	28.1	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	14.8	14.9	1	28.1	28.2	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	14.9	15	1	28.2	28.3	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	15	15.1	1	28.3	28.4	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	15.1	15.2	1	28.4	28.5	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	15.2	15.3	1	28.5	28.6	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	15.3	15.4	1	28.6	28.7	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	15.4	15.5	1	28.7	28.8	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	15.5	15.6	1	28.8	28.9	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	15.6	15.7	1	28.9	29	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	15.7	15.8	1	29	29.1	None	None		None	None	MCBS,	Maximum	H	H	L
C	15.8	15.9	1	29.1	29.2	None	None		None	None	MCBS,	Maximum	H	H	L
C	15.9	16	1	29.2	29.3	None	None		None	None	MCBS,	Maximum	H	H	L
C	16	16.1	1	29.3	29.4	None	None		None	None	MCBS,	Maximum	H	H	L
C	16.1	16.2	1	29.4	29.5	None	None		None	None	MCBS,	Maximum	H	H	L
C	16.2	16.3	1	29.5	29.6	None	None		None	None	MCBS,	Maximum	H	H	L
C	16.3	16.4	1	29.6	29.7	None	None		None	None	MCBS,	Maximum	H	H	L
C	16.4	16.5	1	29.7	29.8	None	None		None	None	MCBS,	Maximum	H	H	L
C	16.5	16.6	1	29.8	29.9	None	None		None	None	MCBS,	Maximum	H	H	L
C	16.6	16.7	1	29.9	30	None	None		None	None	MCBS,	Maximum	H	H	L
C	16.7	16.8	1	30	30.1	None	None		None	None	MCBS,	Maximum	H	H	L
C	16.8	16.9	1	30.1	30.2	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	16.9	17	1	30.2	30.3	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	17	17.1	1	30.3	30.4	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	17.1	17.2	1	30.4	30.5	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	17.2	17.3	1	30.5	30.6	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	17.3	17.4	1	30.6	30.7	None	None		None	None	MCBS,RbS,	Maximum	H	H	L

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
C	17.4	17.5	1	30.7	30.8	None	Maximum		None	None	JTW,MCBS,RbS,	Maximum	H	H	L
C	17.5	17.6	1	30.8	30.9	None	Maximum		None	None	JTW,RbS,	Maximum	H	H	L
C	17.6	17.7	1	30.9	31	None	Maximum		None	None	JTW,RbS,	Maximum	H	H	L
C	17.7	17.8	1	31	31.1	None	Maximum		None	None	JTW,MCBS,RbS,	Maximum	H	H	L
C	17.8	17.9	1	31.1	31.2	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	17.9	18	1	31.2	31.3	None	None		None	None	MCBS,RbS,	Maximum	H	H	L
C	18	18.1	1	31.3	31.4	None	Maximum		None	None	JTW,MCBS,RbS,	Maximum	H	H	L
C	18.1	18.2	1	31.4	31.5	None	Maximum		None	None	JTW,MCBS,	Maximum	H	H	L
C	18.2	18.3	1	31.5	31.6	None	None		None	None	MCBS,	Maximum	H	H	L
C	18.3	18.4	1	31.6	31.7	None	None		None	None	MCBS,	Maximum	H	H	L
C	18.4	18.5	1	31.7	31.8	None	None		None	None	MCBS,	Maximum	H	H	L
C	18.5	18.6	1	31.8	31.9	None	None		None	None	MCBS,	Maximum	H	H	L
C	18.6	18.7	1	31.9	32	None	None		None	None	MCBS,	Maximum	H	H	L
C	18.7	18.8	1	32	32.1	None	None		None	None	MCBS,	Maximum	H	H	L
C	18.8	18.9	1	32.1	32.2	None	None		None	None	MCBS,	Maximum	H	H	L
C	18.9	19	1	32.2	32.3	None	None		None	None	MCBS,	Maximum	H	H	L
C	19	19.1	1	32.3	32.4	None	None		None	None	MCBS,	Maximum	H	H	L
C	19.1	19.2	1	32.4	32.5	None	None		None	None	MCBS,	Maximum	H	H	L
C	19.2	19.3	1	32.5	32.6	None	None		None	None	MCBS,	Maximum	H	H	L
C	19.3	19.4	1	32.6	32.7	None	None		None	None	MCBS,	Maximum	H	H	L
C	19.4	19.5	1	32.7	32.8	None	None		None	None	MCBS,	Maximum	H	H	L
C	19.5	19.6	1	32.8	32.9	None	None		None	None	MCBS,	Maximum	H	H	L
C	19.6	19.7	1	32.9	33	None	None		None	None	MCBS,	Maximum	H	H	L
C	19.7	19.8	1	33	33.1	None	None		None	None	MCBS,	Maximum	H	H	L
C	19.8	19.9	1	33.1	33.2	None	None		None	None	MCBS,	Maximum	H	H	L
C	19.9	20	1	33.2	33.3	None	None		None	None	MCBS,	Maximum	H	H	L
C	20	20.1	1	33.3	33.4	None	None		None	None	MCBS,	Maximum	H	H	L
C	20.1	20.2	1	33.4	33.5	None	None		None	None	MCBS,	Maximum	H	H	L
C	20.2	20.3	1	33.5	33.6	None	None		None	None	MCBS,	Maximum	H	H	L
C	20.3	20.4	1	33.6	33.7	None	None		None	None	MCBS,	Maximum	H	H	L
C	20.4	20.5	1	33.7	33.8	None	None		None	None	MCBS,	Maximum	H	H	L
C	20.5	20.6	1	33.8	33.9	None	None		None	None	MCBS,	Maximum	H	H	L
C	20.6	20.7	1	33.9	34	None	None		None	None	MCBS,	Maximum	H	H	L
C	20.7	20.8	1	34	34.1	None	None		None	None	MCBS,	Maximum	H	H	L
C	20.8	20.9	1	34.1	34.2	None	None		None	None	MCBS,	Maximum	H	H	L
C	20.9	21	1	34.2	34.3	None	None		None	None	MCBS,	Maximum	H	H	L
C	21	21.1	1	34.3	34.4	None	None		None	None	MCBS,	Maximum	H	H	L
C	21.1	21.2	1	34.4	34.5	None	None		None	None	MCBS,	Maximum	H	H	L
C	21.2	21.3	1	34.5	34.6	None	None		None	None	MCBS,	Maximum	H	H	L
C	21.3	21.4	1	34.6	34.7	None	None		None	None	MCBS,	Maximum	H	H	L
C	21.4	21.5	1	34.7	34.8	None	None		None	None	MCBS,	Maximum	H	H	L
C	21.5	21.6	1	34.8	34.9	None	None		None	None	MCBS,	Maximum	H	H	L
C	21.6	21.7	1	34.9	35	None	None		None	None	MCBS,	Maximum	H	H	L
D	0	0.1	1	35	35.1	None	None		None	None	MCBS,	Maximum	H	H	L
D	0.1	0.2	1	35.1	35.2	None	None		None	None	MCBS,	Maximum	H	H	L
D	0.2	0.3	1	35.2	35.3	None	None		None	None	MCBS,	Maximum	H	H	L
D	0.3	0.4	1	35.3	35.4	None	None		None	None	MCBS,	Maximum	H	H	L
D	0.4	0.5	1	35.4	35.5	None	None		None	None	MCBS,	Maximum	H	H	L
D	0.5	0.6	1	35.5	35.6	None	None		None	None	MCBS,	Maximum	H	H	L
D	0.6	0.7	1	35.6	35.7	None	None		None	None	MCBS,	Maximum	H	H	L
D	0.7	0.8	1	35.7	35.8	None	None		None	None	MCBS,	Maximum	H	H	L
D	0.8	0.9	1	35.8	35.9	None	None		None	None	MCBS,	Maximum	H	H	L

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
C	1.8	1.9	1	15.1	15.2	None	None		None	None	MCBS,	Maximum	H	H	L
C	1.9	2	1	15.2	15.3	None	None		None	None	MCBS,	Maximum	H	H	L
C	2	2.1	1	15.3	15.4	None	Maximum		None	None	MCBS,	Maximum	H	H	L
C	2.1	2.2	1	15.4	15.5	None	None		None	None	MCBS,	Maximum	H	H	L
C	2.2	2.3	1	15.5	15.6	None	None		None	None	MCBS,	Maximum	H	H	L
C	2.3	2.4	1	15.6	15.7	None	None		None	None	MCBS,	Maximum	H	H	L
C	2.4	2.5	1	15.7	15.8	None	None		None	None	MCBS,	Maximum	H	H	L
C	2.5	2.6	1	15.8	15.9	None	None		None	None	MCBS,	Maximum	H	H	L
C	2.6	2.7	1	15.9	16	None	None		None	None	MCBS,	Maximum	H	H	L
C	2.7	2.8	1	16	16.1	None	None		None	None	MCBS,	Maximum	H	H	L
C	2.8	2.9	1	16.1	16.2	None	None		None	None	MCBS,	Maximum	H	H	L
C	2.9	3	1	16.2	16.3	None	None		None	None	MCBS,	Maximum	H	H	L
C	3	3.1	1	16.3	16.4	None	Maximum		None	None	JTW,MCBS,	Maximum	H	H	L
C	3.1	3.2	1	16.4	16.5	None	Maximum		None	None	JTW,MCBS,	Maximum	H	H	L
C	3.2	3.3	1	16.5	16.6	None	Maximum		None	None	JTW,MCBS,	Maximum	H	H	L
C	3.3	3.4	1	16.6	16.7	None	Maximum		None	None	JTW,MCBS,	Maximum	H	H	L
C	3.4	3.5	1	16.7	16.8	None	Maximum		None	None	JTW,	Maximum	H	H	L
C	3.5	3.6	1	16.8	16.9	None	Maximum		None	None	JTW,MWS,	Maximum	H	H	L
C	3.6	3.7	1	16.9	17	None	Maximum		None	None	JTW,	Maximum	H	H	L
C	3.7	3.8	1	17	17.1	None	Maximum		None	None	JTW,	Maximum	H	H	L
C	3.8	3.9	1	17.1	17.2	None	Maximum		None	None	JTW,	Maximum	H	H	L
C	3.9	4	1	17.2	17.3	None	Maximum		None	None	JTW,	Maximum	H	H	L
C	4	4.1	1	17.3	17.4	None	Maximum		None	None	JTW,	Maximum	H	H	L
C	4.1	4.2	1	17.4	17.5	None	Maximum		None	None	JTW,	Maximum	H	H	L
C	4.2	4.3	1	17.5	17.6	None	Maximum		None	None	JTW,	Maximum	H	H	L
C	4.3	4.4	1	17.6	17.7	None	Maximum		None	None	JTW,	Maximum	H	H	L
C	4.4	4.5	1	17.7	17.8	None	Maximum		None	None	JTW,	Maximum	H	H	L
C	4.5	4.6	1	17.8	17.9	None	Maximum		None	None	JTW,	Maximum	H	H	L
C	4.6	4.7	1	17.9	18	None	Maximum		None	None	JTW,	Maximum	H	H	L
C	4.7	4.8	1	18	18.1	None	Maximum		None	None	JTW,	Maximum	H	H	L
C	4.8	4.9	1	18.1	18.2	None	Maximum		None	None	JTW,	Maximum	H	H	L
C	4.9	5	1	18.2	18.3	None	Maximum		None	None	JTW,	Maximum	H	H	L
C	5	5.1	1	18.3	18.4	None	Maximum		None	None	JTW,	Maximum	H	H	L
C	5.1	5.2	1	18.4	18.5	None	Maximum		None	None	JTW,	Maximum	H	H	L
C	5.2	5.3	1	18.5	18.6	None	Maximum		None	None	JTW,MCBS,	Maximum	H	H	L
C	5.3	5.4	1	18.6	18.7	None	Maximum		None	None	JTW,MCBS,	Maximum	H	H	L
C	5.4	5.5	1	18.7	18.8	None	None		None	None	MCBS,	Maximum	H	H	L
C	5.5	5.6	1	18.8	18.9	None	None		None	None	MCBS,	Maximum	H	H	L
C	5.6	5.7	1	18.9	19	None	None		None	None	MCBS,	Maximum	H	H	L
C	5.7	5.8	1	19	19.1	None	None		None	None	MCBS,	Maximum	H	H	L
C	5.8	5.9	1	19.1	19.2	None	None		None	None	MCBS,	Maximum	H	H	L
C	5.9	6	1	19.2	19.3	None	None		None	None	MCBS,	Maximum	H	H	L
C	6	6.1	1	19.3	19.4	None	None		None	None	MCBS,	Maximum	H	H	L
C	6.1	6.2	1	19.4	19.5	None	None		None	None	MCBS,	Maximum	H	H	L
C	6.2	6.3	1	19.5	19.6	None	None		None	None	MCBS,	Maximum	H	H	L
C	6.3	6.4	1	19.6	19.7	None	None		None	None	MCBS,	Maximum	H	H	L
C	6.4	6.5	1	19.7	19.8	None	None		None	None	MCBS,	Maximum	H	H	L
C	6.5	6.6	1	19.8	19.9	None	None		None	None	MCBS,	Maximum	H	H	L
C	6.6	6.7	1	19.9	20	None	None		None	None	MCBS,	Maximum	H	H	L
C	6.7	6.8	1	20	20.1	None	None		None	None	MCBS,	Maximum	H	H	L
C	6.8	6.9	1	20.1	20.2	None	None		None	None	MCBS,	Maximum	H	H	L
C	6.9	7	1	20.2	20.3	None	None		None	None	MCBS,	Maximum	H	H	L

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
C	7	7.1	1	20.3	20.4	None	None		None	None	MCBS,	Maximum	H	H	L
C	7.1	7.2	1	20.4	20.5	None	None		None	None	MCBS,	Maximum	H	H	L
C	7.2	7.3	1	20.5	20.6	None	None		None	None	MCBS,	Maximum	H	H	L
C	7.3	7.4	1	20.6	20.7	None	None		None	None	MCBS,	Maximum	H	H	L
C	7.4	7.5	1	20.7	20.8	None	None		None	None	MCBS,	Maximum	H	H	L
C	7.5	7.6	1	20.8	20.9	None	None		None	None	MCBS,	Maximum	H	H	L
C	7.6	7.7	1	20.9	21	None	None		None	None	MCBS,	Maximum	H	H	L
C	7.7	7.8	1	21	21.1	None	None		None	None	MCBS,	Maximum	H	H	L
C	7.8	7.9	1	21.1	21.2	None	None		None	None	MCBS,	Maximum	H	H	L
C	7.9	8	1	21.2	21.3	None	None		None	None	MCBS,	Maximum	H	H	L
C	8	8.1	1	21.3	21.4	None	None		None	None	MCBS,	Maximum	H	H	L
C	8.1	8.2	1	21.4	21.5	None	None		None	None	MCBS,	Maximum	H	H	L
C	8.2	8.3	1	21.5	21.6	None	None		None	None	MCBS,	Maximum	H	H	L
C	8.3	8.4	1	21.6	21.7	None	None		None	None	MCBS,	Maximum	H	H	L
C	8.4	8.5	1	21.7	21.8	None	None		None	None	MCBS,	Maximum	H	H	L
C	8.5	8.6	1	21.8	21.9	None	None		None	None	MCBS,	Maximum	H	H	L
C	8.6	8.7	1	21.9	22	None	None		None	None	MCBS,	Maximum	H	H	L
C	8.7	8.8	1	22	22.1	None	None		None	None	MCBS,	Maximum	H	H	L
C	8.8	8.9	1	22.1	22.2	None	None		None	None	MCBS,	Maximum	H	H	L
C	8.9	9	1	22.2	22.3	None	None		None	None	MCBS,	Maximum	H	H	L
C	9	9.1	1	22.3	22.4	None	None		None	None	MCBS,	Maximum	H	H	L
C	9.1	9.2	1	22.4	22.5	None	None		None	None	MCBS,	Maximum	H	H	L
C	9.2	9.3	1	22.5	22.6	None	None		None	None	MCBS,	Maximum	H	H	L
C	9.3	9.4	1	22.6	22.7	None	None		None	None	MCBS,	Maximum	H	H	L
C	9.4	9.5	1	22.7	22.8	None	None		None	None	MCBS,	Maximum	H	H	L
C	9.5	9.6	1	22.8	22.9	None	None		None	None	MCBS,	Maximum	H	H	L
C	9.6	9.7	1	22.9	23	None	None		None	None	MCBS,	Maximum	H	H	L
C	9.7	9.8	1	23	23.1	None	None		None	None	MCBS,	Maximum	H	H	L
C	9.8	9.9	1	23.1	23.2	None	None		None	None	MCBS,	Maximum	H	H	L
C	9.9	10	1	23.2	23.3	None	None		None	None	MCBS,	Maximum	H	H	L
C	10	10.1	1	23.3	23.4	None	None		None	None	MCBS,	Maximum	H	H	L
C	10.1	10.2	1	23.4	23.5	None	None		None	None	MCBS,	Maximum	H	H	L
C	10.2	10.3	1	23.5	23.6	None	None		None	None	MCBS,	Maximum	H	H	L
C	10.3	10.4	1	23.6	23.7	None	None		None	None	MCBS,	Maximum	H	H	L
C	10.4	10.5	1	23.7	23.8	None	None		None	None	MCBS,	Maximum	H	H	L
C	10.5	10.6	1	23.8	23.9	None	None		None	None	MCBS,	Maximum	H	H	L
C	10.6	10.7	1	23.9	24	None	None		None	None	MCBS,	Maximum	H	H	L
C	10.7	10.8	1	24	24.1	None	None		None	None	MCBS,	Maximum	H	H	L
C	10.8	10.9	1	24.1	24.2	None	None		None	None	MCBS,	Maximum	H	H	L
C	10.9	11	1	24.2	24.3	None	None		None	None	MCBS,	Maximum	H	H	L
C	11	11.1	1	24.3	24.4	None	None		None	None	MCBS,	Maximum	H	H	L
C	11.1	11.2	1	24.4	24.5	None	None		None	None	MCBS,	Maximum	H	H	L
C	11.2	11.3	1	24.5	24.6	None	None		None	None	MCBS,	Maximum	H	H	L
C	11.3	11.4	1	24.6	24.7	None	None		None	None	MCBS,	Maximum	H	H	L
C	11.4	11.5	1	24.7	24.8	None	None		None	None	MCBS,	Maximum	H	H	L
C	11.5	11.6	1	24.8	24.9	None	None		None	None	MCBS,	Maximum	H	H	L
C	11.6	11.7	1	24.9	25	None	None		None	None	MCBS,	Maximum	H	H	L
C	11.7	11.8	1	25	25.1	None	None		None	None	MCBS,	Maximum	H	H	L
C	11.8	11.9	1	25.1	25.2	None	None		None	None	MCBS,	Maximum	H	H	L
C	11.9	12	1	25.2	25.3	None	None		None	None	MCBS,	Maximum	H	H	L
C	12	12.1	1	25.3	25.4	None	None		None	None	MCBS,	Maximum	H	H	L
C	12.1	12.2	1	25.4	25.5	None	None		None	None	MCBS,	Maximum	H	H	L

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
B	17.9	18	2, 2A, 3	31.2	31.3	None	None		None	None	MCBS,	Maximum	H	H	L
B	18	18.1	2, 2A, 3	31.3	31.4	None	None		None	None	Ag,MCBS,	Maximum	H	H	L
B	18.1	18.2	2, 2A, 3	31.4	31.5	None	None		None	None	Ag,MCBS,	Maximum	H	H	L
B	18.2	18.3	2, 2A, 3	31.5	31.6	None	None		None	None	Ag,	Minimal	L	M	L
B	18.3	18.4	2, 2A, 3	31.6	31.7	None	None		None	None	Ag,	Minimal	L	M	L
B	18.4	18.5	2, 2A, 3	31.7	31.8	None	None		None	None	Ag,	Minimal	L	M	L
B	18.5	18.6	2, 2A, 3	31.8	31.9	None	None		None	None	Ag,	Minimal	L	M	L
B	18.6	18.7	2, 2A, 3	31.9	32	None	None		None	None	Ag,MCBS,	Maximum	H	H	L
B	18.7	18.8	2, 2A, 3	32	32.1	None	None		None	None	MCBS,	Maximum	H	H	L
B	18.8	18.9	2, 2A, 3	32.1	32.2	None	None		None	None	MCBS,	Maximum	H	H	L
B	18.9	19	2, 2A, 3	32.2	32.3	None	None		None	None	MCBS,	Maximum	H	H	L
B	19	19.1	2, 2A, 3	32.3	32.4	None	None		None	None	MCBS,	Maximum	H	H	L
B	19.1	19.2	2, 2A, 3	32.4	32.5	None	None		None	None	MCBS,	Maximum	H	H	L
B	19.2	19.3	2, 2A, 3	32.5	32.6	None	None		None	None	Ag,MCBS,	Maximum	H	H	L
B	19.3	19.4	2, 2A, 3	32.6	32.7	None	None		None	None	Ag,	Minimal	L	M	L
B	19.4	19.5	2, 2A, 3	32.7	32.8	None	None		None	None	Ag,	Minimal	L	M	L
B	19.5	19.6	2, 2A, 3	32.8	32.9	None	None		None	None	Ag,	Minimal	L	M	L
B	19.6	19.7	2, 2A, 3	32.9	33	None	None		None	None	Ag,	Minimal	L	M	L
B	19.7	19.8	2, 2A, 3	33	33.1	None	None		None	None	Ag,	Minimal	L	M	L
B	19.8	19.9	2, 2A, 3	33.1	33.2	None	None		None	None	Ag,	Minimal	L	M	L
B	19.9	20	2, 2A, 3	33.2	33.3	None	None		None	None	Ag,	Minimal	L	M	L
B	20	20.1	2, 2A, 3	33.3	33.4	None	None		None	None	Ag,	Minimal	L	M	L
B	20.1	20.2	2, 2A, 3	33.4	33.5	None	None		None	None	Ag,	Minimal	L	M	L
B	20.2	20.3	2, 2A, 3	33.5	33.6	None	None		None	None	Ag,	Minimal	L	M	L
B	20.3	20.4	2, 2A, 3	33.6	33.7	None	None		None	None	Ag,MCBS,	Maximum	H	H	L
B	20.4	20.5	2, 2A, 3	33.7	33.8	None	None		None	None	MCBS,	Maximum	H	H	L
B	20.5	20.6	2, 2A, 3	33.8	33.9	None	None		None	None	MCBS,	Maximum	H	H	L
B	20.6	20.7	2, 2A, 3	33.9	34	None	None		None	None	MCBS,	Maximum	H	H	L
B	20.7	20.8	2, 2A, 3	34	34.1	None	None		None	None	MCBS,	Maximum	H	H	L
B	20.8	20.9	2, 2A, 3	34.1	34.2	None	None		None	None	MCBS,	Maximum	H	H	L
B	20.9	21	2, 2A, 3	34.2	34.3	None	None		None	None	MCBS,	Maximum	H	H	L
B	21	21.1	2, 2A, 3	34.3	34.4	None	None		None	None	MCBS,	Maximum	H	H	L
B	21.1	21.2	2, 2A, 3	34.4	34.5	None	None		None	None	MCBS,	Maximum	H	H	L
B	21.2	21.3	2, 2A, 3	34.5	34.6	None	None		None	None	MCBS,	Maximum	H	H	L
B	21.3	21.4	2, 2A, 3	34.6	34.7	None	None		None	None	Ag,MCBS,	Maximum	H	H	L
B	21.4	21.5	2, 2A, 3	34.7	34.8	None	None		None	None	Ag,	Minimal	L	M	L
B	21.5	21.6	2, 2A, 3	34.8	34.9	None	None		None	None	Ag,	Minimal	L	M	L
B	21.6	21.7	2, 2A, 3	34.9	35	None	None		None	None	Ag,	Minimal	L	M	L
B	21.7	21.8	2, 2A, 3	35	35.1	None	None		None	None	Ag,	Minimal	L	M	L
B	21.8	21.9	2, 2A, 3	35.1	35.2	None	None		None	None	Ag,	Minimal	L	M	L
B	21.9	22	2, 2A, 3	35.2	35.3	None	None		None	None	Ag,	Minimal	L	M	L
B	22	22.1	2, 2A, 3	35.3	35.4	None	None		None	None	Ag,	Minimal	L	M	L
B	22.1	22.2	2, 2A, 3	35.4	35.5	None	None		None	None	Ag,	Minimal	L	M	L
B	22.2	22.3	2, 2A, 3	35.5	35.6	None	None		None	None	Ag,	Minimal	L	M	L
B	22.3	22.4	2, 2A, 3	35.6	35.7	None	None		None	None	Ag,	Minimal	L	M	L
B	22.4	22.5	2, 2A, 3	35.7	35.8	None	None		None	None	Ag,	Minimal	L	M	L
B	22.5	22.6	2, 2A, 3	35.8	35.9	None	None		None	None	Ag,	Minimal	L	M	L
B	22.6	22.7	2, 2A, 3	35.9	36	None	None		None	None	Ag,	Minimal	L	M	L
B	22.7	22.8	2, 2A, 3	36	36.1	None	None		None	None	Ag,	Minimal	L	M	L
B	22.8	22.9	2, 2A, 3	36.1	36.2	None	None		None	None	Ag,	Minimal	L	M	L
B	22.9	23	2, 2A, 3	36.2	36.3	None	None		None	None	Ag,	Minimal	L	M	L
B	23	23.1	2, 2A, 3	36.3	36.4	None	None		None	None	Ag,	Minimal	L	M	L

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
B	23.1	23.2	2, 2A, 3	36.4	36.5	None	None		None	None	Ag,	Minimal	L	M	L
B	23.2	23.3	2, 2A, 3	36.5	36.6	None	None		None	None	Ag,	Minimal	L	M	L
B	23.3	23.4	2, 2A, 3	36.6	36.7	None	None		None	None	Ag,	Minimal	L	M	L
B	23.4	23.5	2, 2A, 3	36.7	36.8	None	None		None	None	Ag,	Minimal	L	M	L
B	23.5	23.6	2, 2A, 3	36.8	36.9	None	None		None	None	Ag,	Minimal	L	M	L
B	23.6	23.7	2, 2A, 3	36.9	37	None	None		None	None	Ag,	Minimal	L	M	L
B	23.7	23.8	2, 2A, 3	37	37.1	None	None		None	None	Ag,	Minimal	L	M	L
B	23.8	23.9	2, 2A, 3	37.1	37.2	None	None		None	None	Ag,AnGr,	Moderate	M	M	L
B	23.9	24	2, 2A, 3	37.2	37.3	None	None		None	None	AnGr,	Moderate	M	M	L
B	24	24.1	2, 2A, 3	37.3	37.4	None	None		None	None	AnGr,	Moderate	M	M	L
B	24.1	24.2	2, 2A, 3	37.4	37.5	None	None		None	None	AnGr,	Moderate	M	M	L
B	24.2	24.3	2, 2A, 3	37.5	37.6	None	None		None	None	AnGr,	Moderate	M	M	L
B	24.3	24.4	2, 2A, 3	37.6	37.7	None	None		None	None	AnGr,	Moderate	M	M	L
B	24.4	24.5	2, 2A, 3	37.7	37.8	None	None		None	None	AnGr,	Moderate	M	M	L
B	24.5	24.6	2, 2A, 3	37.8	37.9	None	None		None	None	AnGr,	Moderate	M	M	L
B	24.6	24.7	2, 2A, 3	37.9	38	None	None		None	None	AnGr,	Moderate	M	M	L
B	24.7	24.8	2, 2A, 3	38	38.1	None	None		None	None	AnGr,	Moderate	M	M	L
B	24.8	24.9	2, 2A, 3	38.1	38.2	None	None		None	None	AnGr,	Moderate	M	M	L
B	24.9	25	2, 2A, 3	38.2	38.3	None	None		None	None	AnGr,	Moderate	M	M	L
B	25	25.1	2, 2A, 3	38.3	38.4	None	None		None	None	AnGr,	Moderate	M	M	L
B	25.1	25.2	2, 2A, 3	38.4	38.5	None	None		None	None	AnGr,	Moderate	M	M	L
B	25.2	25.3	2, 2A, 3	38.5	38.6	None	None		None	None	Ag,AnGr,	Moderate	M	M	L
B	25.3	25.4	2, 2A, 3	38.6	38.7	None	None		None	None	Ag,AnGr,	Moderate	M	M	L
B	25.4	25.5	2, 2A, 3	38.7	38.8	None	None		None	None	Ag,	Minimal	L	M	L
B	25.5	25.6	2, 2A, 3	38.8	38.9	None	None		None	None	Ag,	Minimal	L	M	L
B	25.6	25.7	2, 2A, 3	38.9	39	None	None		None	None	Ag,	Minimal	L	M	L
B	25.7	25.8	2, 2A, 3	39	39.1	None	None		None	None	Ag,	Minimal	L	M	L
B	25.8	25.9	2, 2A, 3	39.1	39.2	None	None		None	None	Ag,	Minimal	L	M	L
B	25.9	26	2, 2A, 3	39.2	39.3	None	None		None	None	Ag,	Minimal	L	M	L
B	26	26.1	2, 2A, 3	39.3	39.4	None	None		None	None	Ag,	Minimal	L	M	L
B	26.1	26.2	2, 2A, 3	39.4	39.5	None	None		None	None	Ag,	Minimal	L	M	L
B	26.2	26.3	2, 2A, 3	39.5	39.6	None	None		None	None	Ag,	Minimal	L	M	L
B	26.3	26.4	2, 2A, 3	39.6	39.7	None	None		None	None	Ag,	Minimal	L	M	L
B	26.4	26.5	2, 2A, 3	39.7	39.8	None	None		None	None	Ag,	Minimal	L	M	L
C	0	0.1	1	13.3	13.4	None	None		None	None	MCBS,	Maximum	H	H	L
C	0.1	0.2	1	13.4	13.5	None	Maximum		None	None	MCBS,	Maximum	H	H	L
C	0.2	0.3	1	13.5	13.6	None	None		None	None	MCBS,	Maximum	H	H	L
C	0.3	0.4	1	13.6	13.7	None	None		None	None	MCBS,	Maximum	H	H	L
C	0.4	0.5	1	13.7	13.8	None	None		None	None	MCBS,	Maximum	H	H	L
C	0.5	0.6	1	13.8	13.9	None	None		None	None	MCBS,	Maximum	H	H	L
C	0.6	0.7	1	13.9	14	None	None		None	None	MCBS,	Maximum	H	H	L
C	0.7	0.8	1	14	14.1	None	None		None	None	MCBS,	Maximum	H	H	L
C	0.8	0.9	1	14.1	14.2	None	None		None	None	MCBS,	Maximum	H	H	L
C	0.9	1	1	14.2	14.3	None	None		None	None	MCBS,	Maximum	H	H	L
C	1	1.1	1	14.3	14.4	None	None		None	None	MCBS,	Maximum	H	H	L
C	1.1	1.2	1	14.4	14.5	None	None		None	None	MCBS,	Maximum	H	H	L
C	1.2	1.3	1	14.5	14.6	None	None		None	None	MCBS,	Maximum	H	H	L
C	1.3	1.4	1	14.6	14.7	None	Maximum		None	None	MCBS,	Maximum	H	H	L
C	1.4	1.5	1	14.7	14.8	None	None		None	None	MCBS,	Maximum	H	H	L
C	1.5	1.6	1	14.8	14.9	None	Maximum		None	None	MCBS,	Maximum	H	H	L
C	1.6	1.7	1	14.9	15	None	None		None	None	MCBS,	Maximum	H	H	L
C	1.7	1.8	1	15	15.1	None	None		None	None	MCBS,	Maximum	H	H	L

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
B	7.5	7.6	2, 2A, 3	20.8	20.9	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	7.6	7.7	2, 2A, 3	20.9	21	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	7.7	7.8	2, 2A, 3	21	21.1	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	7.8	7.9	2, 2A, 3	21.1	21.2	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	7.9	8	2, 2A, 3	21.2	21.3	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	8	8.1	2, 2A, 3	21.3	21.4	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	8.1	8.2	2, 2A, 3	21.4	21.5	None	Maximum		None	None	JTW,	Maximum	H	H	H
B	8.2	8.3	2, 2A, 3	21.5	21.6	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	8.3	8.4	2, 2A, 3	21.6	21.7	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	8.4	8.5	2, 2A, 3	21.7	21.8	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	8.5	8.6	2, 2A, 3	21.8	21.9	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	8.6	8.7	2, 2A, 3	21.9	22	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	8.7	8.8	2, 2A, 3	22	22.1	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	8.8	8.9	2, 2A, 3	22.1	22.2	None	Maximum		None	None	JTW,	Maximum	H	H	H
B	8.9	9	2, 2A, 3	22.2	22.3	None	Maximum		None	None	AnGr,JTW,	Maximum	H	H	M
B	9	9.1	2, 2A, 3	22.3	22.4	None	Maximum		None	None	AnGr,JTW,	Maximum	H	H	M
B	9.1	9.2	2, 2A, 3	22.4	22.5	None	Maximum		None	None	AnGr,JTW	Maximum	H	H	M
B	9.2	9.3	2, 2A, 3	22.5	22.6	None	Maximum		None	None	AnGr,JTW	Maximum	H	H	M
B	9.3	9.4	2, 2A, 3	22.6	22.7	None	Maximum		None	None	AnGr,JTW	Maximum	H	H	M
B	9.4	9.5	2, 2A, 3	22.7	22.8	None	Maximum		None	None	AnGr,JTW,	Maximum	H	H	M
B	9.5	9.6	2, 2A, 3	22.8	22.9	None	Maximum		None	None	AnGr,JTW,	Maximum	H	H	M
B	9.6	9.7	2, 2A, 3	22.9	23	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	9.7	9.8	2, 2A, 3	23	23.1	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	9.8	9.9	2, 2A, 3	23.1	23.2	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	9.9	10	2, 2A, 3	23.2	23.3	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	10	10.1	2, 2A, 3	23.3	23.4	None	Maximum		None	None	DD,JTW,	Maximum	H	H	M
B	10.1	10.2	2, 2A, 3	23.4	23.5	None	Maximum		None	None	DD,JTW,MCBS,	Maximum	H	H	M
B	10.2	10.3	2, 2A, 3	23.5	23.6	None	None		None	None	DD,MCBS,	Maximum	H	H	L
B	10.3	10.4	2, 2A, 3	23.6	23.7	None	None		None	None	MCBS,	Maximum	H	H	L
B	10.4	10.5	2, 2A, 3	23.7	23.8	None	Maximum		None	None	MCBS,	Maximum	H	H	L
B	10.5	10.6	2, 2A, 3	23.8	23.9	None	Maximum		None	None	MCBS,	Maximum	H	H	L
B	10.6	10.7	2, 2A, 3	23.9	24	None	Maximum		None	None	MCBS,	Maximum	H	H	L
B	10.7	10.8	2, 2A, 3	24	24.1	None	Maximum		None	None	MCBS,	Maximum	H	H	L
B	10.8	10.9	2, 2A, 3	24.1	24.2	None	Maximum		None	None	MCBS,	Maximum	H	H	L
B	10.9	11	2, 2A, 3	24.2	24.3	None	Maximum		None	None	MCBS,	Maximum	H	H	L
B	11	11.1	2, 2A, 3	24.3	24.4	None	Maximum		None	None	MCBS,	Maximum	H	H	L
B	11.1	11.2	2, 2A, 3	24.4	24.5	None	Maximum		None	None	MCBS,	Maximum	H	H	H
B	11.2	11.3	2, 2A, 3	24.5	24.6	None	Maximum		None	None	MCBS,	Maximum	H	H	L
B	11.3	11.4	2, 2A, 3	24.6	24.7	None	Maximum		None	None	MCBS,	Maximum	H	H	L
B	11.4	11.5	2, 2A, 3	24.7	24.8	None	Maximum		None	None	MCBS,	Maximum	H	H	L
B	11.5	11.6	2, 2A, 3	24.8	24.9	None	Maximum		None	None	MCBS,	Maximum	H	H	L
B	11.6	11.7	2, 2A, 3	24.9	25	None	Maximum		None	None	MCBS,	Maximum	H	H	L
B	11.7	11.8	2, 2A, 3	25	25.1	None	None		None	None	MCBS,	Maximum	H	H	L
B	11.8	11.9	2, 2A, 3	25.1	25.2	None	None		None	None	MCBS,	Maximum	H	H	L
B	11.9	12	2, 2A, 3	25.2	25.3	None	None		None	None	Ag,MCBS,	Maximum	H	H	L
B	12	12.1	2, 2A, 3	25.3	25.4	None	None		None	None	Ag,MCBS,	Maximum	H	H	L
B	12.1	12.2	2, 2A, 3	25.4	25.5	None	None		None	None	Ag,MCBS,	Maximum	H	H	L
B	12.2	12.3	2, 2A, 3	25.5	25.6	None	None		None	None	Ag,	Minimal	L	M	L
B	12.3	12.4	2, 2A, 3	25.6	25.7	None	None		None	None	Ag,	Minimal	L	M	L
B	12.4	12.5	2, 2A, 3	25.7	25.8	None	None		None	None	Ag,	Minimal	L	M	L
B	12.5	12.6	2, 2A, 3	25.8	25.9	None	None		None	None	Ag,	Minimal	L	M	L
B	12.6	12.7	2, 2A, 3	25.9	26	None	None		None	None	Ag,	Minimal	L	M	L

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
B	12.7	12.8	2, 2A, 3	26	26.1	None	None		None	None	Ag,	Minimal	L	M	L
B	12.8	12.9	2, 2A, 3	26.1	26.2	None	None		None	None	Ag,	Minimal	L	M	L
B	12.9	13	2, 2A, 3	26.2	26.3	None	None		None	None	Ag,	Maximum	H	H	L
B	13	13.1	2, 2A, 3	26.3	26.4	None	None		None	None	Ag,	Minimal	L	M	L
B	13.1	13.2	2, 2A, 3	26.4	26.5	None	None		None	None	Ag,	Minimal	L	M	L
B	13.2	13.3	2, 2A, 3	26.5	26.6	None	None		None	None	Ag,	Minimal	L	M	L
B	13.3	13.4	2, 2A, 3	26.6	26.7	None	None		None	None	Ag,	Minimal	L	M	L
B	13.4	13.5	2, 2A, 3	26.7	26.8	None	None		None	None	Ag,MCBS,	Maximum	H	H	L
B	13.5	13.6	2, 2A, 3	26.8	26.9	None	None		None	None	Ag,MCBS,	Maximum	H	H	L
B	13.6	13.7	2, 2A, 3	26.9	27	None	None		None	None	MCBS,	Maximum	H	H	L
B	13.7	13.8	2, 2A, 3	27	27.1	None	None		None	None	MCBS,	Maximum	H	H	L
B	13.8	13.9	2, 2A, 3	27.1	27.2	None	None		None	None	MCBS,	Maximum	H	H	L
B	13.9	14	2, 2A, 3	27.2	27.3	None	None		None	None	MCBS,	Maximum	H	H	L
B	14	14.1	2, 2A, 3	27.3	27.4	None	None		None	None	MCBS,	Maximum	H	H	L
B	14.1	14.2	2, 2A, 3	27.4	27.5	None	None		None	None	MCBS,	Maximum	H	H	L
B	14.2	14.3	2, 2A, 3	27.5	27.6	None	None		None	None	MCBS,	Maximum	H	H	L
B	14.3	14.4	2, 2A, 3	27.6	27.7	None	None		None	None	MCBS,	Maximum	H	H	L
B	14.4	14.5	2, 2A, 3	27.7	27.8	None	None		None	None	MCBS,	Maximum	H	H	L
B	14.5	14.6	2, 2A, 3	27.8	27.9	None	None		None	None	MCBS,	Maximum	H	H	L
B	14.6	14.7	2, 2A, 3	27.9	28	None	None		None	None	MCBS,	Maximum	H	H	M
B	14.7	14.8	2, 2A, 3	28	28.1	None	None		None	None	MCBS,	Maximum	H	H	M
B	14.8	14.9	2, 2A, 3	28.1	28.2	None	None		None	None	MCBS,	Maximum	H	H	M
B	14.9	15	2, 2A, 3	28.2	28.3	None	None		None	None	MCBS,	Maximum	H	H	M
B	15	15.1	2, 2A, 3	28.3	28.4	None	None		None	None	MCBS,	Maximum	H	H	M
B	15.1	15.2	2, 2A, 3	28.4	28.5	None	None		None	None	MCBS,	Maximum	H	H	M
B	15.2	15.3	2, 2A, 3	28.5	28.6	None	None		None	None	MCBS,	Maximum	H	H	M
B	15.3	15.4	2, 2A, 3	28.6	28.7	None	None		None	None	MCBS,	Maximum	H	H	M
B	15.4	15.5	2, 2A, 3	28.7	28.8	None	None		None	None	MCBS,	Maximum	H	H	M
B	15.5	15.6	2, 2A, 3	28.8	28.9	None	None		None	None	MCBS,	Maximum	H	H	M
B	15.6	15.7	2, 2A, 3	28.9	29	None	None		None	None	MCBS,	Maximum	H	H	M
B	15.7	15.8	2, 2A, 3	29	29.1	None	None		None	None	MCBS,	Maximum	H	H	M
B	15.8	15.9	2, 2A, 3	29.1	29.2	None	None		None	None	MCBS,	Maximum	H	H	M
B	15.9	16	2, 2A, 3	29.2	29.3	None	None		None	None	MCBS,	Maximum	H	H	M
B	16	16.1	2, 2A, 3	29.3	29.4	None	None		None	None	Ag,MCBS,	Maximum	H	H	M
B	16.1	16.2	2, 2A, 3	29.4	29.5	None	None		None	None	Ag,MCBS,	Maximum	H	H	M
B	16.2	16.3	2, 2A, 3	29.5	29.6	None	None		None	None	Ag,MCBS,	Maximum	H	H	M
B	16.3	16.4	2, 2A, 3	29.6	29.7	None	None		None	None	Ag,	Minimal	L	H	M
B	16.4	16.5	2, 2A, 3	29.7	29.8	None	None		None	None	Ag,	Minimal	L	H	M
B	16.5	16.6	2, 2A, 3	29.8	29.9	None	None		None	None	Ag,	Minimal	L	M	L
B	16.6	16.7	2, 2A, 3	29.9	30	None	None		None	None	Ag,	Minimal	L	M	L
B	16.7	16.8	2, 2A, 3	30	30.1	None	None		None	None	Ag,	Minimal	L	M	L
B	16.8	16.9	2, 2A, 3	30.1	30.2	None	None		None	None	Ag,	Minimal	L	M	L
B	16.9	17	2, 2A, 3	30.2	30.3	None	None		None	None	Ag,	Minimal	L	M	L
B	17	17.1	2, 2A, 3	30.3	30.4	None	None		None	None	Ag,	Minimal	L	M	L
B	17.1	17.2	2, 2A, 3	30.4	30.5	None	None		None	None	Ag,	Minimal	L	M	L
B	17.2	17.3	2, 2A, 3	30.5	30.6	None	None		None	None	Ag,	Minimal	L	M	L
B	17.3	17.4	2, 2A, 3	30.6	30.7	None	None		None	None	Ag,	Minimal	L	M	L
B	17.4	17.5	2, 2A, 3	30.7	30.8	None	None		None	None	Ag,MCBS,	Maximum	H	H	L
B	17.5	17.6	2, 2A, 3	30.8	30.9	None	None		None	None	Ag,MCBS,	Maximum	H	H	L
B	17.6	17.7	2, 2A, 3	30.9	31	None	None		None	None	MCBS,	Maximum	H	H	L
B	17.7	17.8	2, 2A, 3	31	31.1	None	None		None	None	MCBS,	Maximum	H	H	L
B	17.8	17.9	2, 2A, 3	31.1	31.2	None	None		None	None	MCBS,	Maximum	H	H	L

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
A	10.4	10.5	1, 2, 2A, 3	10.4	10.5	None	Maximum		None	None	JTW,MWS,	Maximum	H	H	M
A	10.5	10.6	1, 2, 2A, 3	10.5	10.6	None	None		None	None	MWS,	Maximum	H	H	H
A	10.6	10.7	1, 2, 2A, 3	10.6	10.7	None	Maximum		None	None	JTW,MWS,	Maximum	H	H	M
A	10.7	10.8	1, 2, 2A, 3	10.7	10.8	None	Maximum		None	None	JTW,MWS,	Maximum	H	H	M
A	10.8	10.9	1, 2, 2A, 3	10.8	10.9	None	Maximum		None	None	JTW,	Maximum	H	H	M
A	10.9	11	1, 2, 2A, 3	10.9	11	None	Maximum		None	None	JTW,MCBS,	Maximum	H	H	M
A	11	11.1	1, 2, 2A, 3	11	11.1	None	None		None	None	MCBS,	Maximum	H	H	M
A	11.1	11.2	1, 2, 2A, 3	11.1	11.2	None	None		None	None	MCBS,	Maximum	H	H	M
A	11.2	11.3	1, 2, 2A, 3	11.2	11.3	None	None		None	None	MCBS,	Maximum	H	H	M
A	11.3	11.4	1, 2, 2A, 3	11.3	11.4	None	None		None	None	MCBS,	Maximum	H	H	M
A	11.4	11.5	1, 2, 2A, 3	11.4	11.5	None	None		None	None	MCBS,	Maximum	H	H	M
A	11.5	11.6	1, 2, 2A, 3	11.5	11.6	None	None		None	None	MCBS,	Maximum	H	H	M
A	11.6	11.7	1, 2, 2A, 3	11.6	11.7	None	None		None	None	MCBS,	Maximum	H	H	M
A	11.7	11.8	1, 2, 2A, 3	11.7	11.8	None	None		None	None	MCBS,	Maximum	H	H	M
A	11.8	11.9	1, 2, 2A, 3	11.8	11.9	None	None		None	None	MCBS,	Maximum	H	H	M
A	11.9	12	1, 2, 2A, 3	11.9	12	None	None		None	None	MCBS,	Maximum	H	H	M
A	12	12.1	1, 2, 2A, 3	12	12.1	None	None		None	None	MCBS,	Maximum	H	H	M
A	12.1	12.2	1, 2, 2A, 3	12.1	12.2	None	None		None	None	MCBS,	Maximum	H	H	M
A	12.2	12.3	1, 2, 2A, 3	12.2	12.3	None	None		None	None	MCBS,	Maximum	H	H	M
A	12.3	12.4	1, 2, 2A, 3	12.3	12.4	None	None		None	None	MCBS,	Maximum	H	H	M
A	12.4	12.5	1, 2, 2A, 3	12.4	12.5	None	Maximum		None	None	MCBS,	Maximum	H	H	M
A	12.5	12.6	1, 2, 2A, 3	12.5	12.6	None	None		None	None	MCBS,	Maximum	H	H	H
A	12.6	12.7	1, 2, 2A, 3	12.6	12.7	None	Maximum		None	None	MCBS,	Maximum	H	H	H
A	12.7	12.8	1, 2, 2A, 3	12.7	12.8	None	None		None	None	MCBS,	Maximum	H	H	M
A	12.8	12.9	1, 2, 2A, 3	12.8	12.9	None	None		None	None	MCBS,	Maximum	H	H	M
A	12.9	13	1, 2, 2A, 3	12.9	13	None	Maximum		None	None	MCBS,	Maximum	H	H	M
A	13	13.1	1, 2, 2A, 3	13	13.1	None	Maximum		None	None	JTW,MCBS,	Maximum	H	H	M
A	13.1	13.2	1, 2, 2A, 3	13.1	13.2	None	Maximum		None	None	JTW,MCBS,	Maximum	H	H	M
A	13.2	13.2	1, 2, 2A, 3	13.2	13.3	None	None		None	None	MCBS,	Maximum	H	H	H
B	0	0.1	2, 2A, 3	13.3	13.4	None	None		None	None	MCBS,	Maximum	H	H	M
B	0.1	0.2	2, 2A, 3	13.4	13.5	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	0.2	0.3	2, 2A, 3	13.5	13.6	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	0.3	0.4	2, 2A, 3	13.6	13.7	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	0.4	0.5	2, 2A, 3	13.7	13.8	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	0.5	0.6	2, 2A, 3	13.8	13.9	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	0.6	0.7	2, 2A, 3	13.9	14	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	0.7	0.8	2, 2A, 3	14	14.1	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	0.8	0.9	2, 2A, 3	14.1	14.2	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	0.9	1	2, 2A, 3	14.2	14.3	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	1	1.1	2, 2A, 3	14.3	14.4	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	1.1	1.2	2, 2A, 3	14.4	14.5	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	1.2	1.3	2, 2A, 3	14.5	14.6	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	1.3	1.4	2, 2A, 3	14.6	14.7	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	1.4	1.5	2, 2A, 3	14.7	14.8	None	None		None	None	MCBS,	Maximum	H	H	M
B	1.5	1.6	2, 2A, 3	14.8	14.9	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	1.6	1.7	2, 2A, 3	14.9	15	None	Maximum		None	None	AnGr,MCBS,	Maximum	H	H	M
B	1.7	1.8	2, 2A, 3	15	15.1	None	Maximum		None	None	AnGr,MCBS,	Maximum	H	H	M
B	1.8	1.9	2, 2A, 3	15.1	15.2	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	1.9	2	2, 2A, 3	15.2	15.3	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	2	2.1	2, 2A, 3	15.3	15.4	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	2.1	2.2	2, 2A, 3	15.4	15.5	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	2.2	2.3	2, 2A, 3	15.5	15.6	None	Maximum		None	None	MCBS,	Maximum	H	H	M

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
B	2.3	2.4	2, 2A, 3	15.6	15.7	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	2.4	2.5	2, 2A, 3	15.7	15.8	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	2.5	2.6	2, 2A, 3	15.8	15.9	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	2.6	2.7	2, 2A, 3	15.9	16	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	2.7	2.8	2, 2A, 3	16	16.1	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	2.8	2.9	2, 2A, 3	16.1	16.2	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	2.9	3	2, 2A, 3	16.2	16.3	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	3	3.1	2, 2A, 3	16.3	16.4	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	3.1	3.2	2, 2A, 3	16.4	16.5	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	3.2	3.3	2, 2A, 3	16.5	16.6	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	3.3	3.4	2, 2A, 3	16.6	16.7	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	3.4	3.5	2, 2A, 3	16.7	16.8	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	3.5	3.6	2, 2A, 3	16.8	16.9	None	None		None	None	MCBS,	Maximum	H	H	M
B	3.6	3.7	2, 2A, 3	16.9	17	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	3.7	3.8	2, 2A, 3	17	17.1	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	3.8	3.9	2, 2A, 3	17.1	17.2	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	3.9	4	2, 2A, 3	17.2	17.3	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	4	4.1	2, 2A, 3	17.3	17.4	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	4.1	4.2	2, 2A, 3	17.4	17.5	None	Maximum		None	None	JTW,MCBS,	Maximum	H	H	M
B	4.2	4.3	2, 2A, 3	17.5	17.6	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	4.3	4.4	2, 2A, 3	17.6	17.7	None	Maximum		None	None	JTW,MCBS,	Maximum	H	H	M
B	4.4	4.5	2, 2A, 3	17.7	17.8	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	4.5	4.6	2, 2A, 3	17.8	17.9	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	4.6	4.7	2, 2A, 3	17.9	18	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	4.7	4.8	2, 2A, 3	18	18.1	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	4.8	4.9	2, 2A, 3	18.1	18.2	None	Maximum		None	None	JTW,MCBS,	Maximum	H	H	M
B	4.9	5	2, 2A, 3	18.2	18.3	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	5	5.1	2, 2A, 3	18.3	18.4	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	5.1	5.2	2, 2A, 3	18.4	18.5	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	5.2	5.3	2, 2A, 3	18.5	18.6	None	Maximum		None	None	JTW,	Maximum	H	H	H
B	5.3	5.4	2, 2A, 3	18.6	18.7	None	Maximum		None	None	JTW,	Maximum	H	H	H
B	5.4	5.5	2, 2A, 3	18.7	18.8	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	5.5	5.6	2, 2A, 3	18.8	18.9	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	5.6	5.7	2, 2A, 3	18.9	19	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	5.7	5.8	2, 2A, 3	19	19.1	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	5.8	5.9	2, 2A, 3	19.1	19.2	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	5.9	6	2, 2A, 3	19.2	19.3	None	Maximum		None	None	JTW,	Maximum	H	H	H
B	6	6.1	2, 2A, 3	19.3	19.4	None	Maximum		None	None	JTW,	Maximum	H	H	H
B	6.1	6.2	2, 2A, 3	19.4	19.5	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	6.2	6.3	2, 2A, 3	19.5	19.6	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	6.3	6.4	2, 2A, 3	19.6	19.7	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	6.4	6.5	2, 2A, 3	19.7	19.8	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	6.5	6.6	2, 2A, 3	19.8	19.9	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	6.6	6.7	2, 2A, 3	19.9	20	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	6.7	6.8	2, 2A, 3	20	20.1	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	6.8	6.9	2, 2A, 3	20.1	20.2	None	Maximum		None	None	JTW,MCBS,	Maximum	H	H	M
B	6.9	7	2, 2A, 3	20.2	20.3	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	7	7.1	2, 2A, 3	20.3	20.4	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	7.1	7.2	2, 2A, 3	20.4	20.5	None	Maximum		None	None	MCBS,	Maximum	H	H	M
B	7.2	7.3	2, 2A, 3	20.5	20.6	None	Maximum		None	None	JTW,MCBS,	Maximum	H	H	M
B	7.3	7.4	2, 2A, 3	20.6	20.7	None	Maximum		None	None	JTW,	Maximum	H	H	M
B	7.4	7.5	2, 2A, 3	20.7	20.8	None	Maximum		None	None	JTW,	Maximum	H	H	M

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
A	0	0.1	1, 2, 2A, 3	0	0.1	None	None		None	None	MCBS,	Maximum	H	H	H
A	0.1	0.2	1, 2, 2A, 3	0.1	0.2	None	None		None	None	MCBS,	Maximum	H	H	H
A	0.2	0.3	1, 2, 2A, 3	0.2	0.3	None	None		None	None	MCBS,	Maximum	H	H	H
A	0.3	0.4	1, 2, 2A, 3	0.3	0.4	None	None		None	None	MCBS,	Maximum	H	H	H
A	0.4	0.5	1, 2, 2A, 3	0.4	0.5	None	None		None	None	MCBS,	Maximum	H	H	H
A	0.5	0.6	1, 2, 2A, 3	0.5	0.6	None	None		None	None	MCBS,MWS,	Maximum	H	H	H
A	0.6	0.7	1, 2, 2A, 3	0.6	0.7	None	None		None	None	MWS,	Maximum	H	H	H
A	0.7	0.8	1, 2, 2A, 3	0.7	0.8	None	None		None	None	MWS,	Maximum	H	H	H
A	0.8	0.9	1, 2, 2A, 3	0.8	0.9	None	None		None	None	MCBS,MWS,	Maximum	H	H	H
A	0.9	1	1, 2, 2A, 3	0.9	1	None	None		None	None	MCBS,	Maximum	H	H	H
A	1	1.1	1, 2, 2A, 3	1	1.1	None	None		None	None	MCBS,	Maximum	H	H	H
A	1.1	1.2	1, 2, 2A, 3	1.1	1.2	None	None		None	None	MCBS,	Maximum	H	H	H
A	1.2	1.3	1, 2, 2A, 3	1.2	1.3	None	None		None	None	MCBS,	Maximum	H	H	H
A	1.3	1.4	1, 2, 2A, 3	1.3	1.4	None	None		None	None	MCBS,	Maximum	H	H	H
A	1.4	1.5	1, 2, 2A, 3	1.4	1.5	None	None		None	None	MCBS,	Maximum	H	H	H
A	1.5	1.6	1, 2, 2A, 3	1.5	1.6	None	None		None	None	MCBS,	Maximum	H	H	H
A	1.6	1.7	1, 2, 2A, 3	1.6	1.7	None	None		None	None	MCBS,	Maximum	H	H	H
A	1.7	1.8	1, 2, 2A, 3	1.7	1.8	None	None		None	None	MCBS,	Maximum	H	H	H
A	1.8	1.9	1, 2, 2A, 3	1.8	1.9	None	None		None	None	MCBS,	Maximum	H	H	H
A	1.9	2	1, 2, 2A, 3	1.9	2	None	None		None	None	MCBS,	Maximum	H	H	H
A	2	2.1	1, 2, 2A, 3	2	2.1	None	None		None	None	MCBS,	Maximum	H	H	H
A	2.1	2.2	1, 2, 2A, 3	2.1	2.2	None	None		None	None	MCBS,	Maximum	H	H	H
A	2.2	2.3	1, 2, 2A, 3	2.2	2.3	None	None		None	None	MCBS,	Maximum	H	H	H
A	2.3	2.4	1, 2, 2A, 3	2.3	2.4	None	None		None	None	MCBS,	Maximum	H	H	H
A	2.4	2.5	1, 2, 2A, 3	2.4	2.5	None	None		None	None	MCBS,	Maximum	H	H	H
A	2.5	2.6	1, 2, 2A, 3	2.5	2.6	None	None		None	None	MCBS,	Maximum	H	H	H
A	2.6	2.7	1, 2, 2A, 3	2.6	2.7	None	None		None	None	MCBS,	Maximum	H	H	H
A	2.7	2.8	1, 2, 2A, 3	2.7	2.8	None	None		None	None	MCBS,	Maximum	H	H	H
A	2.8	2.9	1, 2, 2A, 3	2.8	2.9	None	None		None	None	MCBS,MWS,	Maximum	H	H	H
A	2.9	3	1, 2, 2A, 3	2.9	3	None	None		None	None	MCBS,MWS,	Maximum	H	H	H
A	3	3.1	1, 2, 2A, 3	3	3.1	None	None		None	None	MCBS,	Maximum	H	H	H
A	3.1	3.2	1, 2, 2A, 3	3.1	3.2	None	None		None	None	MCBS,	Maximum	H	H	H
A	3.2	3.3	1, 2, 2A, 3	3.2	3.3	None	None		None	None	MCBS,	Maximum	H	H	H
A	3.3	3.4	1, 2, 2A, 3	3.3	3.4	None	None		None	None	MCBS,	Maximum	H	H	H
A	3.4	3.5	1, 2, 2A, 3	3.4	3.5	None	None		None	None	MCBS,MWS,	Maximum	H	H	H
A	3.5	3.6	1, 2, 2A, 3	3.5	3.6	None	None		None	None	MCBS,MWS,	Maximum	H	H	H
A	3.6	3.7	1, 2, 2A, 3	3.6	3.7	None	None		None	None	MCBS,MWS,	Maximum	H	H	H
A	3.7	3.8	1, 2, 2A, 3	3.7	3.8	None	None		None	None	MCBS,	Maximum	H	H	M
A	3.8	3.9	1, 2, 2A, 3	3.8	3.9	None	None		None	None	MCBS,	Maximum	H	H	M
A	3.9	4	1, 2, 2A, 3	3.9	4	None	None		None	None	MCBS,	Maximum	H	H	M
A	4	4.1	1, 2, 2A, 3	4	4.1	None	None		None	None	MCBS,	Maximum	H	H	M
A	4.1	4.2	1, 2, 2A, 3	4.1	4.2	None	None		None	None	MCBS,	Maximum	H	H	M
A	4.2	4.3	1, 2, 2A, 3	4.2	4.3	None	None		None	None	MCBS,	Maximum	H	H	M
A	4.3	4.4	1, 2, 2A, 3	4.3	4.4	None	None		None	None	MCBS,	Maximum	H	H	M
A	4.4	4.5	1, 2, 2A, 3	4.4	4.5	None	None		None	None	MCBS,MWS,	Maximum	H	H	M
A	4.5	4.6	1, 2, 2A, 3	4.5	4.6	None	None		None	None	MCBS,MWS,	Maximum	H	H	M
A	4.6	4.7	1, 2, 2A, 3	4.6	4.7	None	None		None	None	MCBS,MWS,	Maximum	H	H	M
A	4.7	4.8	1, 2, 2A, 3	4.7	4.8	None	None		None	None	MCBS,MWS,	Maximum	H	H	M
A	4.8	4.9	1, 2, 2A, 3	4.8	4.9	None	None		None	None	MCBS,MWS,	Maximum	H	H	M
A	4.9	5	1, 2, 2A, 3	4.9	5	None	None		None	None	MCBS,MWS,	Maximum	H	H	M
A	5	5.1	1, 2, 2A, 3	5	5.1	None	None		None	None	MCBS,MWS,	Maximum	H	H	M
A	5.1	5.2	1, 2, 2A, 3	5.1	5.2	None	None		None	None	MCBS,	Maximum	H	H	M

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Joshua Tree Protected Area	Plant Sensitivity	Plant Initial Impact	Riparian Community	Biological Protected Area	Vegetation	Vegetation Community Sensitivity	Vegetation Community Initial Impact	Biology Initial Impact	Biology Residual Impact
A	5.2	5.3	1, 2, 2A, 3	5.2	5.3	None	None		None	None	MCBS,	Maximum	H	H	M
A	5.3	5.4	1, 2, 2A, 3	5.3	5.4	None	None		None	None	MCBS,MWS,	Maximum	H	H	M
A	5.4	5.5	1, 2, 2A, 3	5.4	5.5	None	None		None	None	MCBS,MWS,	Maximum	H	H	M
A	5.5	5.6	1, 2, 2A, 3	5.5	5.6	None	None		None	None	MCBS,	Maximum	H	H	M
A	5.6	5.7	1, 2, 2A, 3	5.6	5.7	None	None		None	None	MCBS,	Maximum	H	H	M
A	5.7	5.8	1, 2, 2A, 3	5.7	5.8	None	None		None	None	MCBS,	Maximum	H	H	M
A	5.8	5.9	1, 2, 2A, 3	5.8	5.9	None	None		None	None	MCBS,	Maximum	H	H	M
A	5.9	6	1, 2, 2A, 3	5.9	6	None	None		None	None	MCBS,	Maximum	H	H	H
A	6	6.1	1, 2, 2A, 3	6	6.1	None	Maximum		None	None	JTW,MCBS,MWS,	Maximum	H	H	M
A	6.1	6.2	1, 2, 2A, 3	6.1	6.2	None	Maximum		None	None	JTW,MCBS,MWS,	Maximum	H	H	H
A	6.2	6.3	1, 2, 2A, 3	6.2	6.3	None	None		None	None	MCBS,	Maximum	H	H	M
A	6.3	6.4	1, 2, 2A, 3	6.3	6.4	None	None		None	None	MCBS,	Maximum	H	H	M
A	6.4	6.5	1, 2, 2A, 3	6.4	6.5	None	None		None	None	MCBS,MWS,	Maximum	H	H	H
A	6.5	6.6	1, 2, 2A, 3	6.5	6.6	None	None		None	None	MCBS,MWS,	Maximum	H	H	M
A	6.6	6.7	1, 2, 2A, 3	6.6	6.7	None	None		None	None	MCBS,	Maximum	H	H	H
A	6.7	6.8	1, 2, 2A, 3	6.7	6.8	None	None		None	None	MCBS,MWS,	Maximum	H	H	M
A	6.8	6.9	1, 2, 2A, 3	6.8	6.9	None	None		None	None	MCBS,MWS,	Maximum	H	H	H
A	6.9	7	1, 2, 2A, 3	6.9	7	None	None		None	None	MCBS,MWS,	Maximum	H	H	M
A	7	7.1	1, 2, 2A, 3	7	7.1	None	None		None	None	MCBS,	Maximum	H	H	M
A	7.1	7.2	1, 2, 2A, 3	7.1	7.2	None	None		None	None	MCBS,	Maximum	H	H	M
A	7.2	7.3	1, 2, 2A, 3	7.2	7.3	None	None		None	None	MCBS,	Maximum	H	H	M
A	7.3	7.4	1, 2, 2A, 3	7.3	7.4	None	None		None	None	MCBS,	Maximum	H	H	M
A	7.4	7.5	1, 2, 2A, 3	7.4	7.5	None	None		None	None	MCBS,	Maximum	H	H	H
A	7.5	7.6	1, 2, 2A, 3	7.5	7.6	None	None		None	None	MCBS,	Maximum	H	H	M
A	7.6	7.7	1, 2, 2A, 3	7.6	7.7	None	None		None	None	MCBS,	Maximum	H	H	M
A	7.7	7.8	1, 2, 2A, 3	7.7	7.8	None	None		None	None	MCBS,	Maximum	H	H	M
A	7.8	7.9	1, 2, 2A, 3	7.8	7.9	None	None		None	None	MCBS,	Maximum	H	H	M
A	7.9	8	1, 2, 2A, 3	7.9	8	None	None		None	None	MCBS,	Maximum	H	H	M
A	8	8.1	1, 2, 2A, 3	8	8.1	None	None		None	None	MCBS,	Maximum	H	H	M
A	8.1	8.2	1, 2, 2A, 3	8.1	8.2	None	None		None	None	MCBS,	Maximum	H	H	M
A	8.2	8.3	1, 2, 2A, 3	8.2	8.3	None	None		None	None	MCBS,	Maximum	H	H	M
A	8.3	8.4	1, 2, 2A, 3	8.3	8.4	None	None		None	None	MCBS,	Maximum	H	H	H
A	8.4	8.5	1, 2, 2A, 3	8.4	8.5	None	None		None	None	MCBS,	Maximum	H	H	M
A	8.5	8.6	1, 2, 2A, 3	8.5	8.6	None	None		None	None	MCBS,	Maximum	H	H	M
A	8.6	8.7	1, 2, 2A, 3	8.6	8.7	None	None		None	None	MCBS,	Maximum	H	H	M
A	8.7	8.8	1, 2, 2A, 3	8.7	8.8	None	None		None	None	MCBS,	Maximum	H	H	M
A	8.8	8.9	1, 2, 2A, 3	8.8	8.9	None	None		None	None	MCBS,	Maximum	H	H	M
A	8.9	9	1, 2, 2A, 3	8.9	9	None	None		None	None	MCBS,	Maximum	H	H	M
A	9	9.1	1, 2, 2A, 3	9	9.1	None	Maximum		None	None	MCBS,	Maximum	H	H	M
A	9.1	9.2	1, 2, 2A, 3	9.1	9.2	None	None		None	None	MCBS,	Maximum	H	H	M
A	9.2	9.3	1, 2, 2A, 3	9.2	9.3	None	None		None	None	MCBS,	Maximum	H	H	M
A	9.3	9.4	1, 2, 2A, 3	9.3	9.4	None	None		None	None	MCBS,	Maximum	H	H	M
A	9.4	9.5	1, 2, 2A, 3	9.4	9.5	None	None		None	None	MCBS,	Maximum	H	H	M
A	9.5	9.6	1, 2, 2A, 3	9.5	9.6	None	None		None	None	MCBS,	Maximum	H	H	M
A	9.6	9.7	1, 2, 2A, 3	9.6	9.7	None	None		None	None	MCBS,	Maximum	H	H	M
A	9.7	9.8	1, 2, 2A, 3	9.7	9.8	None	Maximum		None	None	JTW,MCBS,	Maximum	H	H	H
A	9.8	9.9	1, 2, 2A, 3	9.8	9.9	None	Maximum		None	None	JTW,MCBS,	Maximum	H	H	M
A	9.9	10	1, 2, 2A, 3	9.9	10	None	Maximum		None	None	JTW,MCBS,	Maximum	H	H	M
A	10	10.1	1, 2, 2A, 3	10	10.1	None	Maximum		None	None	JTW,	Maximum	H	H	M
A	10.1	10.2	1, 2, 2A, 3	10.1	10.2	None	Maximum		None	None	JTW,	Maximum	H	H	M
A	10.2	10.3	1, 2, 2A, 3	10.2	10.3	None	Maximum		None	None	JTW,	Maximum	H	H	M
A	10.3	10.4	1, 2, 2A, 3	10.3	10.4	None	Maximum		None	None	JTW,MWS,	Maximum	H	H	M

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
I	25.2	25.3	3	68.7	68.8	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFl,SOWL,WRBat,WYbC,	Unknown	No	Yes	No	L	Moderate	H	None	None	None
I	25.3	25.4	3	68.8	68.9	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFl,SOWL,WRBat,WYbC,	Unknown	No	Yes	No	L	Moderate	H	None	None	None
I	25.4	25.5	3	68.9	69	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFl,SOWL,WRBat,WYbC,	Unknown	No	Yes	No	L	Moderate	H	None	None	None
I	25.5	25.6	3	69	69.1	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFl,SOWL,WRBat,WYbC,	Unknown	No	Yes	No	L	Moderate	H	None	None	None
I	25.6	25.7	3	69.1	69.2	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFl,SOWL,WRBat,WYbC,	Unknown	Yes	Yes	No	L	Maximum	H	None	None	None
I	25.7	25.8	3	69.2	69.3	BHS,CACO,CaLL,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,SOWL,TPkMo,WePkMo,WRBat,WYbC,	Unknown	Yes	No	No	L	Maximum	H	None	None	None
I	25.8	25.9	3	69.3	69.4	BHS,CACO,CaLL,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,SOWL,TPkMo,WePkMo,WRBat,WYbC,	Unknown	Yes	No	No	L	Maximum	H	None	None	None
I	25.9	26	3	69.4	69.5	BHS,CACO,CaLL,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,SOWL,TPkMo,WePkMo,WRBat,WYbC,	Unknown	No	No	No	L	Moderate	H	None	None	None
I	26	26.1	3	69.5	69.6	BHS,CACO,CaLL,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,SOWL,TPkMo,WePkMo,WRBat,WYbC,	Unknown	No	No	No	L	Moderate	H	None	None	None
I	26.1	26.2	3	69.6	69.7	BHS,CACO,CaLL,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,SOWL,TPkMo,WePkMo,WRBat,WYbC,	Unknown	No	No	No	L	Moderate	H	None	None	None
I	26.2	26.3	3	69.7	69.8	BHS,CACO,CaLL,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,SOWL,TPkMo,WePkMo,WRBat,WYbC,	Unknown	No	No	No	L	Moderate	H	None	None	None
I	26.3	26.4	3	69.8	69.9	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	None	L	None	None	None
I	26.4	26.5	3	69.9	70	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	None	L	None	None	None
I	26.5	26.6	3	70	70.1	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	None	L	None	None	None
I	26.6	26.7	3	70.1	70.2	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	None	L	None	None	None
I	26.7	26.8	3	70.2	70.3	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	None	L	None	None	None
I	26.8	26.9	3	70.3	70.4	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	None	L	None	None	None
I	26.9	27	3	70.4	70.5	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	None	L	None	None	None
I	27	27.1	3	70.5	70.6	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	None	L	None	None	None
I	27.1	27.2	3	70.6	70.7	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	None	L	None	None	None
I	27.2	27.3	3	70.7	70.8	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	None	L	None	None	None
I	27.3	27.4	3	70.8	70.9	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	None	L	None	None	None
I	27.4	27.5	3	70.9	71	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	None	L	None	None	None
I	27.5	27.6	3	71	71.1	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	None	L	None	None	None
I	27.6	27.7	3	71.1	71.2	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	None	L	None	None	None
I	27.7	27.8	3	71.2	71.3	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	None	L	None	None	None
I	27.8	27.9	3	71.3	71.4	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	27.9	28	3	71.4	71.5	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	28	28.1	3	71.5	71.6	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	28.1	28.2	3	71.6	71.7	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	28.2	28.3	3	71.7	71.8	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	28.3	28.4	3	71.8	71.9	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	28.4	28.5	3	71.9	72	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	28.5	28.6	3	72	72.1	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	28.6	28.7	3	72.1	72.2	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	28.7	28.8	3	72.2	72.3	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	28.8	28.9	3	72.3	72.4	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	28.9	29	3	72.4	72.5	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	29	29.1	3	72.5	72.6	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	29.1	29.2	3	72.6	72.7	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	29.2	29.3	3	72.7	72.8	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	29.3	29.4	3	72.8	72.9	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	29.4	29.5	3	72.9	73	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	Moderate	M	None	None	No
I	29.5	29.6	3	73	73.1	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	Moderate	M	None	None	No
I	29.6	29.7	3	73.1	73.2	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	NA	No	No	L	Moderate	M	None	None	No
I	29.7	29.8	3	73.2	73.3	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	NA	No	No	L	Moderate	M	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
I	29.8	29.9	3	73.3	73.4	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	NA	No	No	L	Moderate	M	None	None	No
I	29.9	30	3	73.4	73.5	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	NA	No	No	L	Moderate	M	None	None	No
I	30	30.1	3	73.5	73.6	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	NA	No	No	L	Moderate	M	None	None	No
I	30.1	30.2	3	73.6	73.7	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	NA	No	No	L	Moderate	M	None	None	No
I	30.2	30.3	3	73.7	73.8	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	NA	No	No	M	Moderate	M	None	None	No
I	30.3	30.4	3	73.8	73.9	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	NA	No	No	M	Moderate	M	None	None	No
I	30.4	30.5	3	73.9	74	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	NA	No	No	M	Moderate	M	None	None	No
I	30.5	30.6	3	74	74.1	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	NA	No	No	M	Moderate	M	None	None	No
I	30.6	30.7	3	74.1	74.2	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	NA	No	No	M	Moderate	M	None	None	No
I	30.7	30.8	3	74.2	74.3	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,TPkMo, WePkMo,WYbC,	Unknown	NA	No	No	M	Moderate	M	None	None	No
I	30.8	30.9	3	74.3	74.4	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,TPkMo, WePkMo,WYbC,	Unknown	NA	No	No	M	Moderate	M	None	None	No
I	30.9	31	3	74.4	74.5	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,TPkMo, WePkMo,WYbC,	Unknown	NA	No	No	M	Moderate	M	None	None	No
I	31	31.1	3	74.5	74.6	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	M	None	M	None	None	No
I	31.1	31.2	3	74.6	74.7	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	M	None	M	None	None	No
I	31.2	31.3	3	74.7	74.8	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	M	None	M	None	None	No
I	31.3	31.4	3	74.8	74.9	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	M	None	M	None	None	No
I	31.4	31.5	3	74.9	75	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	31.5	31.6	3	75	75.1	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	31.6	31.7	3	75.1	75.2	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	31.7	31.8	3	75.2	75.3	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	31.8	31.9	3	75.3	75.4	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	31.9	32	3	75.4	75.5	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	32	32.1	3	75.5	75.6	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	32.1	32.2	3	75.6	75.7	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
I	15.6	15.7	3	59.1	59.2	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	M	Moderate	H	None	None	No
I	15.7	15.8	3	59.2	59.3	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	M	Moderate	H	None	None	No
I	15.8	15.9	3	59.3	59.4	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	M	Moderate	H	None	None	No
I	15.9	16	3	59.4	59.5	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	M	Moderate	H	None	None	No
I	16	16.1	3	59.5	59.6	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	M	Moderate	H	None	None	No
I	16.1	16.2	3	59.6	59.7	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	M	Moderate	H	None	None	No
I	16.2	16.3	3	59.7	59.8	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	M	Moderate	H	None	None	No
I	16.3	16.4	3	59.8	59.9	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	M	Moderate	H	None	None	No
I	16.4	16.5	3	59.9	60	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	16.5	16.6	3	60	60.1	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	16.6	16.7	3	60.1	60.2	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	16.7	16.8	3	60.2	60.3	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	16.8	16.9	3	60.3	60.4	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
I	16.9	17	3	60.4	60.5	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
I	17	17.1	3	60.5	60.6	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	None	L	SML	None	No
I	17.1	17.2	3	60.6	60.7	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	None	L	SML	None	No
I	17.2	17.3	3	60.7	60.8	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	Yes	No	No	L	Maximum	H	SML	None	No
I	17.3	17.4	3	60.8	60.9	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	Yes	No	No	L	Maximum	H	SML	None	No
I	17.4	17.5	3	60.9	61	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	None	L	None	None	No
I	17.5	17.6	3	61	61.1	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	None	L	SML	None	No
I	17.6	17.7	3	61.1	61.2	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	None	L	SML	None	No
I	17.7	17.8	3	61.2	61.3	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	None	L	SML	None	No
I	17.8	17.9	3	61.3	61.4	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	17.9	18	3	61.4	61.5	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	18	18.1	3	61.5	61.6	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	None	L	SML	None	No
I	18.1	18.2	3	61.6	61.7	BHS,Bowl,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TBeBat,TPkMo,WePkMo,WRBat,WYbC,	Unknown	No	No	No	L	Minimal	M	SJBT, SML	None	No
I	18.2	18.3	3	61.7	61.8	BHS,Bowl,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TBeBat,TPkMo,WePkMo,WRBat,WYbC,	Unknown	No	No	No	L	Minimal	M	SML	None	No
I	18.3	18.4	3	61.8	61.9	BHS,Bowl,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TBeBat,TPkMo,WePkMo,WRBat,WYbC,	Unknown	No	No	No	L	Minimal	M	SML	None	No
I	18.4	18.5	3	61.9	62	Bowl,CACO,PeFI,TBeBat,WRBat,	Unknown	No	No	No	L	Minimal	M	SML	None	No
I	18.5	18.6	3	62	62.1	Bowl,CACO,PeFI,TBeBat,WRBat,	Unknown	No	No	No	L	Minimal	M	None	None	No
I	18.6	18.7	3	62.1	62.2	Bowl,CACO,PeFI,TBeBat,WRBat,	Unknown	NA	No	No	L	Minimal	M	None	None	No
I	18.7	18.8	3	62.2	62.3	Bowl,CACO,PeFI,TBeBat,WRBat,	Unknown	NA	No	No	L	Minimal	M	None	None	No
I	18.8	18.9	3	62.3	62.4	BHS,Bowl,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TBeBat,TPkMo,WePkMo,WRBat,WYbC,	Unknown	NA	No	No	L	Minimal	M	None	None	No
I	18.9	19	3	62.4	62.5	BHS,Bowl,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TBeBat,TPkMo,WePkMo,WRBat,WYbC,	Unknown	NA	No	No	L	Minimal	M	None	None	No
I	19	19.1	3	62.5	62.6	BHS,Bowl,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TBeBat,TPkMo,WePkMo,WRBat,WYbC,	Unknown	NA	No	No	L	Minimal	M	None	None	No
I	19.1	19.2	3	62.6	62.7	Bowl,CACO,PeFI,TBeBat,WRBat,	Unknown	NA	No	No	L	Minimal	M	None	None	No
I	19.2	19.3	3	62.7	62.8	Bowl,CACO,PeFI,TBeBat,WRBat,	Unknown	NA	No	No	L	Minimal	M	None	None	No
I	19.3	19.4	3	62.8	62.9	Bowl,CACO,PeFI,TBeBat,WRBat,	Unknown	NA	No	No	M	Minimal	M	None	None	No
I	19.4	19.5	3	62.9	63	Bowl,CACO,PeFI,TBeBat,WRBat,	Unknown	NA	No	No	M	Minimal	M	None	None	No
I	19.5	19.6	3	63	63.1	Bowl,CACO,PeFI,TBeBat,WRBat,	Unknown	NA	No	No	M	Minimal	M	None	None	No
I	19.6	19.7	3	63.1	63.2	Bowl,CACO,PeFI,TBeBat,WRBat,	Unknown	NA	No	No	M	Minimal	M	None	None	No
I	19.7	19.8	3	63.2	63.3	Bowl,CACO,PeFI,TBeBat,WRBat,	Unknown	NA	No	No	M	Minimal	M	None	None	No
I	19.8	19.9	3	63.3	63.4	Bowl,CACO,PeFI,TBeBat,WRBat,	Unknown	NA	No	No	M	Minimal	M	None	None	No
I	19.9	20	3	63.4	63.5	Bowl,CACO,PeFI,TBeBat,WRBat,	Unknown	NA	No	No	M	Minimal	M	None	None	No
I	20	20.1	3	63.5	63.6	Bowl,CACO,PeFI,TBeBat,WRBat,	Unknown	NA	No	No	M	Minimal	M	None	None	No
I	20.1	20.2	3	63.6	63.7	Bowl,CACO,PeFI,TBeBat,WRBat,	Unknown	NA	No	No	M	Minimal	M	None	None	No
I	20.2	20.3	3	63.7	63.8	Bowl,CACO,PeFI,TBeBat,WRBat,	Unknown	NA	No	No	M	Minimal	M	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
I	20.3	20.4	3	63.8	63.9	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	NA	No	No	L	Minimal	M	None	None	No
I	20.4	20.5	3	63.9	64	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	NA	No	No	L	Minimal	M	None	None	No
I	20.5	20.6	3	64	64.1	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	NA	No	No	L	Minimal	M	None	None	No
I	20.6	20.7	3	64.1	64.2	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	NA	No	No	L	Minimal	M	None	None	No
I	20.7	20.8	3	64.2	64.3	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	NA	No	No	L	Minimal	M	None	None	No
I	20.8	20.9	3	64.3	64.4	BaEa,Bowl,CACO,CaLL,MtKS,PeFl,SRBoa,TBeBat,TPkMo,WePkMo,WRBat,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	20.9	21	3	64.4	64.5	BaEa,Bowl,CACO,CaLL,MtKS,PeFl,SRBoa,TBeBat,TPkMo,WePkMo,WRBat,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	21	21.1	3	64.5	64.6	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	21.1	21.2	3	64.6	64.7	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	21.2	21.3	3	64.7	64.8	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	21.3	21.4	3	64.8	64.9	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	21.4	21.5	3	64.9	65	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	21.5	21.6	3	65	65.1	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	21.6	21.7	3	65.1	65.2	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	21.7	21.8	3	65.2	65.3	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	21.8	21.9	3	65.3	65.4	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	21.9	22	3	65.4	65.5	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	22	22.1	3	65.5	65.6	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	22.1	22.2	3	65.6	65.7	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	22.2	22.3	3	65.7	65.8	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	22.3	22.4	3	65.8	65.9	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	22.4	22.5	3	65.9	66	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	22.5	22.6	3	66	66.1	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	22.6	22.7	3	66.1	66.2	BaEa,Bowl,CACO,CaLL,CHL,CRBoa,MtKS,PBat,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	22.7	22.8	3	66.2	66.3	BaEa,Bowl,CACO,CaLL,CHL,CRBoa,MtKS,PBat,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	22.8	22.9	3	66.3	66.4	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	22.9	23	3	66.4	66.5	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	23	23.1	3	66.5	66.6	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	23.1	23.2	3	66.6	66.7	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	NA	Yes	No	L	Moderate	H	None	None	No
I	23.2	23.3	3	66.7	66.8	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	Yes	No	M	Moderate	M	None	None	None
I	23.3	23.4	3	66.8	66.9	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	Yes	No	M	Moderate	H	None	None	None
I	23.4	23.5	3	66.9	67	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	Yes	No	M	Moderate	H	None	None	None
I	23.5	23.6	3	67	67.1	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	M	None	M	None	None	None
I	23.6	23.7	3	67.1	67.2	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	M	None	M	None	None	None
I	23.7	23.8	3	67.2	67.3	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	M	None	M	None	None	None
I	23.8	23.9	3	67.3	67.4	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	M	None	M	None	None	None
I	23.9	24	3	67.4	67.5	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	M	None	M	SJBT	None	No
I	24	24.1	3	67.5	67.6	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	M	None	M	None	None	None
I	24.1	24.2	3	67.6	67.7	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	M	None	M	None	None	None
I	24.2	24.3	3	67.7	67.8	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	Yes	No	M	Moderate	H	None	None	None
I	24.3	24.4	3	67.8	67.9	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	Yes	No	L	Moderate	H	None	None	None
I	24.4	24.5	3	67.9	68	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	Yes	No	L	Moderate	H	None	None	None
I	24.5	24.6	3	68	68.1	BHS,CACO,CaLL,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,SOWL,TPkMo,WePkMo,WRBat,WYbC,	Unknown	No	Yes	No	L	Moderate	H	None	None	None
I	24.6	24.7	3	68.1	68.2	BHS,CACO,CaLL,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,SOWL,TPkMo,WePkMo,WRBat,WYbC,	Unknown	No	Yes	No	L	Moderate	H	None	None	None
I	24.7	24.8	3	68.2	68.3	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFl,SOWL,WRBat,WYbC,	Unknown	No	Yes	No	L	Moderate	H	None	None	None
I	24.8	24.9	3	68.3	68.4	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFl,SOWL,WRBat,WYbC,	Unknown	No	Yes	No	L	Moderate	H	None	None	None
I	24.9	25	3	68.4	68.5	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFl,SOWL,WRBat,WYbC,	Unknown	No	Yes	No	L	Moderate	H	None	None	None
I	25	25.1	3	68.5	68.6	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFl,SOWL,WRBat,WYbC,	Unknown	No	Yes	No	L	Moderate	H	None	None	None
I	25.1	25.2	3	68.6	68.7	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFl,SOWL,WRBat,WYbC,	Unknown	No	Yes	No	L	Moderate	H	None	None	None

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
I	6.1	6.2	3	49.6	49.7	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
I	6.2	6.3	3	49.7	49.8	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
I	6.3	6.4	3	49.8	49.9	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
I	6.4	6.5	3	49.9	50	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
I	6.5	6.6	3	50	50.1	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
I	6.6	6.7	3	50.1	50.2	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
I	6.7	6.8	3	50.2	50.3	BaEa,BHS,CACO,CaLL,LAPkMo,LBV,MtKS,PeFl,RFS,SRBoa,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
I	6.8	6.9	3	50.3	50.4	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No	L	Maximum	H	None	None	No
I	6.9	7	3	50.4	50.5	BaEa,CACO,CaLL,CHL,CRBoa,LBV,MtKS,PBat,PeFl,SOWL,SRBoa,TPkMo,WePkMo,WRBat,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
I	7	7.1	3	50.5	50.6	BaEa,CACO,CaLL,CHL,CRBoa,LBV,MtKS,PBat,PeFl,SOWL,SRBoa,TPkMo,WePkMo,WRBat,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
I	7.1	7.2	3	50.6	50.7	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFl,SOWL,WRBat,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
I	7.2	7.3	3	50.7	50.8	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFl,SOWL,WRBat,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
I	7.3	7.4	3	50.8	50.9	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFl,SOWL,WRBat,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
I	7.4	7.5	3	50.9	51	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFl,SOWL,WRBat,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
I	7.5	7.6	3	51	51.1	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFl,SOWL,WRBat,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
I	7.6	7.7	3	51.1	51.2	Bowl,CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFl,SOWL,TBeBat,WRBat,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
I	7.7	7.8	3	51.2	51.3	Bowl,CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFl,SOWL,TBeBat,WRBat,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
I	7.8	7.9	3	51.3	51.4	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	NA	No	No	M	Maximum	H	None	None	No
I	7.9	8	3	51.4	51.5	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	NA	No	No	M	Maximum	H	None	None	No
I	8	8.1	3	51.5	51.6	Bowl,CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFl,SOWL,TBeBat,WRBat,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
I	8.1	8.2	3	51.6	51.7	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	NA	No	No	M	Maximum	H	None	None	No
I	8.2	8.3	3	51.7	51.8	BaEa,Bowl,CACO,CaLL,MtKS,PeFl,SRBoa,TBeBat,TPkMo,WePkMo,WRBat,	Unknown	NA	No	No	M	Maximum	H	None	None	No
I	8.3	8.4	3	51.8	51.9	BaEa,Bowl,CACO,CaLL,MtKS,PeFl,SRBoa,TBeBat,TPkMo,WePkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
I	8.4	8.5	3	51.9	52	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No	L	Maximum	H	None	None	No
I	8.5	8.6	3	52	52.1	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No	L	Maximum	H	None	None	No
I	8.6	8.7	3	52.1	52.2	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No	L	Maximum	H	None	None	No
I	8.7	8.8	3	52.2	52.3	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No	L	Maximum	H	None	None	No
I	8.8	8.9	3	52.3	52.4	BaEa,BHS,CACO,CaLL,LAPkMo,LBV,MtKS,PeFl,RFS,SRBoa,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
I	8.9	9	3	52.4	52.5	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
I	9	9.1	3	52.5	52.6	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
I	9.1	9.2	3	52.6	52.7	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
I	9.2	9.3	3	52.7	52.8	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	9.3	9.4	3	52.8	52.9	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	9.4	9.5	3	52.9	53	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	9.5	9.6	3	53	53.1	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	9.6	9.7	3	53.1	53.2	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	9.7	9.8	3	53.2	53.3	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	9.8	9.9	3	53.3	53.4	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	9.9	10	3	53.4	53.5	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	10	10.1	3	53.5	53.6	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	10.1	10.2	3	53.6	53.7	BaEa,BHS,CACO,CaLL,LAPkMo,LBV,MtKS,PeFl,RFS,SRBoa,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	10.2	10.3	3	53.7	53.8	BaEa,BHS,CACO,CaLL,LAPkMo,LBV,MtKS,PeFl,RFS,SRBoa,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	10.3	10.4	3	53.8	53.9	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	10.4	10.5	3	53.9	54	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	10.5	10.6	3	54	54.1	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	10.6	10.7	3	54.1	54.2	BaEa,BHS,CACO,CaLL,LAPkMo,LBV,MtKS,PeFl,RFS,SRBoa,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	10.7	10.8	3	54.2	54.3	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
I	10.8	10.9	3	54.3	54.4	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	10.9	11	3	54.4	54.5	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	11	11.1	3	54.5	54.6	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	11.1	11.2	3	54.6	54.7	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	11.2	11.3	3	54.7	54.8	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	11.3	11.4	3	54.8	54.9	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	11.4	11.5	3	54.9	55	BHS,CACO,CaLL,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,SOWL,TPkMo,WePkMo,WRBat,WYbC,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	11.5	11.6	3	55	55.1	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFI,SOWL,WRBat,WYbC,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	11.6	11.7	3	55.1	55.2	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFI,SOWL,WRBat,WYbC,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	11.7	11.8	3	55.2	55.3	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFI,SOWL,WRBat,WYbC,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	11.8	11.9	3	55.3	55.4	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFI,SOWL,WRBat,WYbC,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	11.9	12	3	55.4	55.5	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFI,SOWL,WRBat,WYbC,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	12	12.1	3	55.5	55.6	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFI,SOWL,WRBat,WYbC,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	12.1	12.2	3	55.6	55.7	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFI,SOWL,WRBat,WYbC,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	12.2	12.3	3	55.7	55.8	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFI,SOWL,WRBat,WYbC,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	12.3	12.4	3	55.8	55.9	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFI,SOWL,WRBat,WYbC,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	12.4	12.5	3	55.9	56	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFI,SOWL,WRBat,WYbC,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	12.5	12.6	3	56	56.1	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFI,SOWL,WRBat,WYbC,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	12.6	12.7	3	56.1	56.2	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFI,SOWL,WRBat,WYbC,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	12.7	12.8	3	56.2	56.3	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFI,SOWL,WRBat,WYbC,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	12.8	12.9	3	56.3	56.4	BHS,CACO,CaLL,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,SOWL,TPkMo,WePkMo,WRBat,WYbC,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	12.9	13	3	56.4	56.5	BHS,CACO,CaLL,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,SOWL,TPkMo,WePkMo,WRBat,WYbC,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	13	13.1	3	56.5	56.6	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	13.1	13.2	3	56.6	56.7	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	13.2	13.3	3	56.7	56.8	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	13.3	13.4	3	56.8	56.9	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	13.4	13.5	3	56.9	57	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	13.5	13.6	3	57	57.1	BHS,CACO,CaLL,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,SOWL,TPkMo,WePkMo,WRBat,WYbC,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	13.6	13.7	3	57.1	57.2	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFI,SOWL,WRBat,WYbC,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	13.7	13.8	3	57.2	57.3	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFI,SOWL,WRBat,WYbC,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	13.8	13.9	3	57.3	57.4	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFI,SOWL,WRBat,WYbC,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	13.9	14	3	57.4	57.5	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFI,SOWL,WRBat,WYbC,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	14	14.1	3	57.5	57.6	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFI,SOWL,WRBat,WYbC,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	14.1	14.2	3	57.6	57.7	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFI,SOWL,WRBat,WYbC,	Unknown	NA	No	No	L	Moderate	H	None	None	No
I	14.2	14.3	3	57.7	57.8	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFI,SOWL,WRBat,WYbC,	Unknown	NA	No	No	H	Moderate	H	None	None	No
I	14.3	14.4	3	57.8	57.9	BHS,CACO,CaLL,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,SOWL,TPkMo,WePkMo,WRBat,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
I	14.4	14.5	3	57.9	58	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
I	14.5	14.6	3	58	58.1	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
I	14.6	14.7	3	58.1	58.2	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
I	14.7	14.8	3	58.2	58.3	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
I	14.8	14.9	3	58.3	58.4	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
I	14.9	15	3	58.4	58.5	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
I	15	15.1	3	58.5	58.6	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
I	15.1	15.2	3	58.6	58.7	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
I	15.2	15.3	3	58.7	58.8	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
I	15.3	15.4	3	58.8	58.9	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
I	15.4	15.5	3	58.9	59	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	M	Moderate	H	None	None	No
I	15.5	15.6	3	59	59.1	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	M	Moderate	H	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
H2	16.6	16.7	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	NA	No	No	L	Moderate	M	None	None	No
H2	16.7	16.8	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	NA	No	No	L	Moderate	M	None	None	No
H2	16.8	16.9	None			BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,TPkMo, WePkMo,WYbC,	Unknown	No	No	No	L	Moderate	M	None	None	No
H2	16.9	17	None			BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	None	L	None	None	No
H2	17	17.1	None			BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	None	L	None	None	No
I	0	0.1	3	43.5	43.6	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
I	0.1	0.2	3	43.6	43.7	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
I	0.2	0.3	3	43.7	43.8	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
I	0.3	0.4	3	43.8	43.9	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
I	0.4	0.5	3	43.9	44	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
I	0.5	0.6	3	44	44.1	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
I	0.6	0.7	3	44.1	44.2	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
I	0.7	0.8	3	44.2	44.3	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
I	0.8	0.9	3	44.3	44.4	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
I	0.9	1	3	44.4	44.5	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
I	1	1.1	3	44.5	44.6	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
I	1.1	1.2	3	44.6	44.7	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
I	1.2	1.3	3	44.7	44.8	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
I	1.3	1.4	3	44.8	44.9	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
I	1.4	1.5	3	44.9	45	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
I	1.5	1.6	3	45	45.1	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
I	1.6	1.7	3	45.1	45.2	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
I	1.7	1.8	3	45.2	45.3	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No		Moderate	M	None	None	No
I	1.8	1.9	3	45.3	45.4	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No		Moderate	M	None	None	No
I	1.9	2	3	45.4	45.5	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No		Moderate	M	None	None	No
I	2	2.1	3	45.5	45.6	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No		Moderate	M	None	None	No
I	2.1	2.2	3	45.6	45.7	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No		Moderate	M	None	None	No
I	2.2	2.3	3	45.7	45.8	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No		Moderate	M	None	None	No
I	2.3	2.4	3	45.8	45.9	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No		Moderate	M	None	None	No
I	2.4	2.5	3	45.9	46	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No		Moderate	M	None	None	No
I	2.5	2.6	3	46	46.1	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No		Moderate	M	None	None	No
I	2.6	2.7	3	46.1	46.2	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No		Moderate	M	None	None	No
I	2.7	2.8	3	46.2	46.3	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No		Moderate	M	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
I	2.8	2.9	3	46.3	46.4	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No		Moderate	M	None	None	No
I	2.9	3	3	46.4	46.5	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No		Moderate	M	None	None	No
I	3	3.1	3	46.5	46.6	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No		Moderate	M	None	None	No
I	3.1	3.2	3	46.6	46.7	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No		Moderate	M	None	None	No
I	3.2	3.3	3	46.7	46.8	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Moderate	M	None	None	No
I	3.3	3.4	3	46.8	46.9	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Moderate	M	None	None	No
I	3.4	3.5	3	46.9	47	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
I	3.5	3.6	3	47	47.1	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
I	3.6	3.7	3	47.1	47.2	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
I	3.7	3.8	3	47.2	47.3	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
I	3.8	3.9	3	47.3	47.4	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
I	3.9	4	3	47.4	47.5	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
I	4	4.1	3	47.5	47.6	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
I	4.1	4.2	3	47.6	47.7	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
I	4.2	4.3	3	47.7	47.8	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Moderate	M	None	None	No
I	4.3	4.4	3	47.8	47.9	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Moderate	M	None	None	No
I	4.4	4.5	3	47.9	48	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Moderate	M	None	None	No
I	4.5	4.6	3	48	48.1	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Moderate	M	None	None	No
I	4.6	4.7	3	48.1	48.2	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Moderate	M	None	None	No
I	4.7	4.8	3	48.2	48.3	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Moderate	M	None	None	No
I	4.8	4.9	3	48.3	48.4	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Moderate	M	None	None	No
I	4.9	5	3	48.4	48.5	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Maximum	H	None	None	No
I	5	5.1	3	48.5	48.6	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Maximum	H	None	None	No
I	5.1	5.2	3	48.6	48.7	BHS,Bowl,CACO,CaLL,CHL,CRBoa,CRLF,LAPkMo,LBV,MOGS,PBat,PeFI,RFS,RnSn,SOWL,SwHk,SwPT,TPkMo,WRBat,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
I	5.2	5.3	3	48.7	48.8	BHS,Bowl,CACO,CaLL,CHL,CRBoa,CRLF,LAPkMo,LBV,MOGS,PBat,PeFI,RFS,RnSn,SOWL,SwHk,SwPT,TPkMo,WRBat,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
I	5.3	5.4	3	48.8	48.9	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFI,SOWL,WRBat,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
I	5.4	5.5	3	48.9	49	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFI,SOWL,WRBat,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
I	5.5	5.6	3	49	49.1	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFI,SOWL,WRBat,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
I	5.6	5.7	3	49.1	49.2	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFI,SOWL,WRBat,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
I	5.7	5.8	3	49.2	49.3	BHS,CACO,CaLL,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,SOWL,TPkMo,WePkMo,WRBat,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
I	5.8	5.9	3	49.3	49.4	BHS,CACO,CaLL,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,SOWL,TPkMo,WePkMo,WRBat,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
I	5.9	6	3	49.4	49.5	BHS,CACO,CaLL,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,SOWL,TPkMo,WePkMo,WRBat,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
I	6	6.1	3	49.5	49.6	BHS,CACO,CaLL,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,SOWL,TPkMo,WePkMo,WRBat,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
H2	6.4	6.5	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	M	None	None	No
H2	6.5	6.6	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	6.6	6.7	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	6.7	6.8	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	M	None	None	No
H2	6.8	6.9	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	M	None	None	No
H2	6.9	7	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	M	None	None	No
H2	7	7.1	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	M	None	None	No
H2	7.1	7.2	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	M	None	None	No
H2	7.2	7.3	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	M	SML	None	No
H2	7.3	7.4	None			BaEa,Bowl,CACO,CaLL,CHL,CRBoa,MtKS,PBat,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No	M	Moderate	M	None	None	No
H2	7.4	7.5	None			BaEa,Bowl,CACO,CaLL,CHL,CRBoa,MtKS,PBat,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No	M	Moderate	M	None	None	No
H2	7.5	7.6	None			BaEa,Bowl,CACO,CaLL,CHL,CRBoa,MtKS,PBat,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	7.6	7.7	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	7.7	7.8	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	M	Moderate	M	None	None	No
H2	7.8	7.9	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	M	Moderate	M	None	None	No
H2	7.9	8	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	M	Moderate	M	None	None	No
H2	8	8.1	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
H2	8.1	8.2	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	None	None	No
H2	8.2	8.3	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
H2	8.3	8.4	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	None	None	No
H2	8.4	8.5	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	None	None	No
H2	8.5	8.6	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	None	None	No
H2	8.6	8.7	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	None	None	No
H2	8.7	8.8	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	SML	None	No
H2	8.8	8.9	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	None	None	No
H2	8.9	9	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
H2	9	9.1	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	M	Moderate	H	SML	None	No
H2	9.1	9.2	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	M	Moderate	H	SML	None	No
H2	9.2	9.3	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	M	Moderate	H	SML	None	No
H2	9.3	9.4	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	M	Moderate	H	SML	None	No
H2	9.4	9.5	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	9.5	9.6	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	M	Maximum	H	None	NIGL	No
H2	9.6	9.7	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	M	Moderate	H	SML	None	No
H2	9.7	9.8	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	M	Moderate	H	None	CEME2	No
H2	9.8	9.9	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	M	Moderate	H	SML	None	No
H2	9.9	10	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	10	10.1	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	10.1	10.2	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	M	Moderate	H	SML	None	No
H2	10.2	10.3	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	M	Moderate	H	SML	None	No
H2	10.3	10.4	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	M	Moderate	H	SML	None	No
H2	10.4	10.5	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
H2	10.5	10.6	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
H2	10.6	10.7	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	10.7	10.8	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	10.8	10.9	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	M	Maximum	H	SML	CEME2	No
H2	10.9	11	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	M	Moderate	H	SML	None	No
H2	11	11.1	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
H2	11.1	11.2	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	SML	None	No
H2	11.2	11.3	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	SML	CEME2	No
H2	11.3	11.4	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	L	Maximum	H	SML	None	No
H2	11.4	11.5	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	L	Maximum	H	SML	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
H2	11.5	11.6	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	PMG, SML	None	No
H2	11.6	11.7	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	SML	None	No
H2	11.7	11.8	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	None	None	No
H2	11.8	11.9	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	None	None	No
H2	11.9	12	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	SML	None	No
H2	12	12.1	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	SML	None	No
H2	12.1	12.2	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	None	None	No
H2	12.2	12.3	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	None	None	No
H2	12.3	12.4	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	None	None	No
H2	12.4	12.5	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	None	None	No
H2	12.5	12.6	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
H2	12.6	12.7	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
H2	12.7	12.8	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	None	None	No
H2	12.8	12.9	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	None	None	No
H2	12.9	13	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	None	None	No
H2	13	13.1	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	None	None	No
H2	13.1	13.2	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	None	None	No
H2	13.2	13.3	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
H2	13.3	13.4	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	None	None	No
H2	13.4	13.5	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
H2	13.5	13.6	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
H2	13.6	13.7	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
H2	13.7	13.8	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
H2	13.8	13.9	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
H2	13.9	14	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
H2	14	14.1	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
H2	14.1	14.2	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
H2	14.2	14.3	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
H2	14.3	14.4	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
H2	14.4	14.5	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
H2	14.5	14.6	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	None	None	No
H2	14.6	14.7	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	None	None	No
H2	14.7	14.8	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	None	CEME2	No
H2	14.8	14.9	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	H	None	None	No
H2	14.9	15	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
H2	15	15.1	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	15.1	15.2	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	15.2	15.3	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	15.3	15.4	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	M	Maximum	H	SML	None	No
H2	15.4	15.5	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	M	Moderate	H	SML	None	No
H2	15.5	15.6	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	M	Maximum	H	None	NIGL, TARA	No
H2	15.6	15.7	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	M	Maximum	H	None	CEME2, NIGL, TARA	No
H2	15.7	15.8	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	15.8	15.9	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
H2	15.9	16	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
H2	16	16.1	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	M	Moderate	M	None	None	No
H2	16.1	16.2	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
H2	16.2	16.3	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
H2	16.3	16.4	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	M	None	None	No
H2	16.4	16.5	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	M	None	None	No
H2	16.5	16.6	None			BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	L	Moderate	M	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
H1	0.7	0.8	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
H1	0.8	0.9	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
H1	0.9	1	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
H1	1	1.1	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
H1	1.1	1.2	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
H1	1.2	1.3	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
H1	1.3	1.4	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
H1	1.4	1.5	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
H1	1.5	1.6	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
H1	1.6	1.7	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
H1	1.7	1.8	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
H1	1.8	1.9	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
H1	1.9	2	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
H1	2	2.1	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
H1	2.1	2.2	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
H1	2.2	2.3	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
H1	2.3	2.4	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
H1	2.4	2.5	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
H1	2.5	2.6	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
H1	2.6	2.7	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,LBV,MOGS,MtKS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WePkMo,WRBat,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
H1	2.7	2.7	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,LBV,MOGS,MtKS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WePkMo,WRBat,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
H2	0	0.1	None			BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
H2	0.1	0.2	None			BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
H2	0.2	0.3	None			BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
H2	0.3	0.4	None			BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
H2	0.4	0.5	None			BHS,Bowl,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WePkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
H2	0.5	0.6	None			BHS,Bowl,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WePkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
H2	0.6	0.7	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
H2	0.7	0.8	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
H2	0.8	0.9	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
H2	0.9	1	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
H2	1	1.1	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
H2	1.1	1.2	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
H2	1.2	1.3	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
H2	1.3	1.4	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
H2	1.4	1.5	None			BHS,Bowl,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WePkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
H2	1.5	1.6	None			BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
H2	1.6	1.7	None			BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	M	None	M	None	None	No
H2	1.7	1.8	None			BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	M	None	M	None	None	No
H2	1.8	1.9	None			BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	M	None	M	None	None	No
H2	1.9	2	None			BaEa,BHS,CACO,CaLL,LAPkMo,LBV,MtKS,PeFl,RFS,SRBoa,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	M	Moderate	M	None	None	No
H2	2	2.1	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No	M	Moderate	M	None	None	No
H2	2.1	2.2	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No	M	Moderate	M	None	None	No
H2	2.2	2.3	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No	M	Moderate	M	None	None	No
H2	2.3	2.4	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No	M	Moderate	M	None	None	No
H2	2.4	2.5	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No	M	Moderate	M	None	None	No
H2	2.5	2.6	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	M	None	None	No
H2	2.6	2.7	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	M	None	None	No
H2	2.7	2.8	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	2.8	2.9	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	2.9	3	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	3	3.1	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
H2	3.1	3.2	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
H2	3.2	3.3	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
H2	3.3	3.4	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
H2	3.4	3.5	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
H2	3.5	3.6	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
H2	3.6	3.7	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
H2	3.7	3.8	None			BaEa,CACO,CaLL,CHL,CRBoa,LBV,MtKS,PBat,PeFl,SOWL,SRBoa,TPkMo,WePkMo,WRBat,WYbC,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	3.8	3.9	None			CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFl,SOWL,WRBat,WYbC,	Unknown	No	No	No	M	Moderate	H	None	None	No
H2	3.9	4	None			BaEa,CACO,CaLL,CHL,CRBoa,LBV,MtKS,PBat,PeFl,SOWL,SRBoa,TPkMo,WePkMo,WRBat,WYbC,	Unknown	No	No	No	M	Moderate	H	None	None	No
H2	4	4.1	None			BaEa,CACO,CaLL,CHL,CRBoa,LBV,MtKS,PBat,PeFl,SOWL,SRBoa,TPkMo,WePkMo,WRBat,WYbC,	Unknown	No	No	No	M	Moderate	H	None	None	No
H2	4.1	4.2	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	4.2	4.3	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	4.3	4.4	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	4.4	4.5	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	4.5	4.6	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	4.6	4.7	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	4.7	4.8	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	4.8	4.9	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	4.9	5	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No	M	Moderate	H	None	None	No
H2	5	5.1	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No	M	Moderate	H	None	None	No
H2	5.1	5.2	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No	M	Moderate	M	None	None	No
H2	5.2	5.3	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No	M	Moderate	M	None	None	No
H2	5.3	5.4	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	M	None	None	No
H2	5.4	5.5	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	5.5	5.6	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	M	None	None	No
H2	5.6	5.7	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	5.7	5.8	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
H2	5.8	5.9	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	M	None	None	No
H2	5.9	6	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	M	None	None	No
H2	6	6.1	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	M	None	None	No
H2	6.1	6.2	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	M	SML	None	No
H2	6.2	6.3	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	M	SML	None	No
H2	6.3	6.4	None			BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	M	SML	CEME2	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
F2	1.1	1.2	3	41.8	41.9	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
F2	1.2	1.3	3	41.9	42	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
F2	1.3	1.4	3	42	42.1	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
F2	1.4	1.5	3	42.1	42.2	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
F2	1.5	1.6	3	42.2	42.3	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
F2	1.6	1.7	3	42.3	42.4	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
F2	1.7	1.8	3	42.4	42.5	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
F2	1.8	1.9	3	42.5	42.6	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
F2	1.9	2	3	42.6	42.7	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
F2	2	2.1	3	42.7	42.8	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
F2	2.1	2.2	3	42.8	42.9	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
F2	2.2	2.3	3	42.9	43	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
F2	2.3	2.4	3	43	43.1	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
F2	2.4	2.5	3	43.1	43.2	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
F2	2.5	2.6	3	43.2	43.3	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
F2	2.6	2.7	3	43.3	43.4	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
F2	2.7	2.8	3	43.4	43.5	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
115	0	0.1	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
115	0.1	0.2	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
115	0.2	0.3	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
115	0.3	0.4	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
115	0.4	0.5	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
115	0.5	0.6	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
115	0.6	0.7	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
115	0.7	0.8	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
115	0.8	0.9	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
115	0.9	1	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
115	1	1.1	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
115	1.1	1.2	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
115	1.2	1.3	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
115	1.3	1.4	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
115	1.4	1.5	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
115	1.5	1.6	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
115	1.6	1.7	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
115	1.7	1.8	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
115	1.8	1.9	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
115	1.9	2	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
115	2	2.1	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
115	2.1	2.2	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
115	2.2	2.3	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
115	2.3	2.4	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
115	2.4	2.5	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
115	2.5	2.6	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
115	2.6	2.7	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
115	2.7	2.8	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
115	2.8	2.9	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
115	2.9	3	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
115	3	3.1	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
115	3.1	3.2	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
115	3.2	3.3	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
115	3.3	3.4	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
115	3.4	3.5	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
115	3.5	3.6	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
115	3.6	3.7	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
115	3.7	3.8	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
115	3.8	3.9	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Moderate	M	None	None	No
115	3.9	4	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,LBV,MOGS,MtKS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WePkMo,WRBat,WYbC,	Unknown	NA	No	No	L	Moderate	M	None	None	No
115	4	4.1	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,LBV,MOGS,MtKS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WePkMo,WRBat,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
115	4.1	4.2	None			BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
115	4.2	4.3	None			BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
115	4.3	4.4	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,LBV,MOGS,MtKS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WePkMo,WRBat,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
115	4.4	4.5	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,LBV,MOGS,MtKS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WePkMo,WRBat,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
115	4.5	4.6	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
115	4.6	4.7	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
115	4.7	4.8	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,LBV,MOGS,MtKS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WePkMo,WRBat,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
H1	0	0.1	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
H1	0.1	0.2	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
H1	0.2	0.3	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
H1	0.3	0.4	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
H1	0.4	0.5	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
H1	0.5	0.6	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
H1	0.6	0.7	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
G	19.9	20	2, 2A	59.7	59.8	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No		None	NI	SJBT	SIOR4	No
G	20	20.1	2, 2A	59.8	59.9	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No		None	NI	SML	CEME2, SIOR4	No
G	20.1	20.2	2, 2A	59.9	60	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No		None	NI	SJBT,	None	No
G	20.2	20.3	2, 2A	60	60.1	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	Yes	No	No		Maximum	H	SML, SJBT,	SATR12	No
G	20.3	20.4	2, 2A	60.1	60.2	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,TPkMo, WePkMo,WYbC,	Unknown	Yes	No	No		Maximum	H	SJBT, SML	SIOR4	No
G	20.4	20.5	2, 2A	60.2	60.3	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,TPkMo, WePkMo,WYbC,	Unknown	No	No	No		Moderate	M	SJBT, SML	SIOR4	No
G	20.5	20.6	2, 2A	60.3	60.4	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,TPkMo, WePkMo,WYbC,	Unknown	Yes	No	No		Maximum	H	SJBT,	None	No
G	20.6	20.7	2, 2A	60.4	60.5	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,TPkMo, WePkMo,WYbC,	Unknown	Yes	No	No		Maximum	H	SJBT	NIGL	No
G	20.7	20.8	2, 2A	60.5	60.6	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	20.8	20.9	2, 2A	60.6	60.7	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No		None	NI	None	None	No
G	20.9	21	2, 2A	60.7	60.8	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No		None	NI	None	None	No
2a	0	0.1	2A	0	0.1	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No		Minimal	L	None	None	No
2a	0.1	0.2	2A	0.1	0.2	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No	M	Minimal	M	None	None	No
2a	0.2	0.3	2A	0.2	0.3	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No	M	Minimal	M	None	None	No
2a	0.3	0.4	2A	0.3	0.4	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No	M	Minimal	M	None	None	No
2a	0.4	0.5	2A	0.4	0.5	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No	M	Minimal	M	None	None	No
2a	0.5	0.6	2A	0.5	0.6	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No	M	Minimal	M	None	None	No
2a	0.6	0.7	2A	0.6	0.7	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No	M	Minimal	M	None	None	No
2a	0.7	0.8	2A	0.7	0.8	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No	L	Minimal	M	None	None	No
2a	0.8	0.9	2A	0.8	0.9	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No	L	Minimal	M	None	None	No
2a	0.9	1	2A	0.9	1	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No	L	Minimal	M	None	None	No
2a	1	1.1	2A	1	1.1	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No	L	Minimal	M	None	None	No
2a	1.1	1.2	2A	1.1	1.2	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
2a	1.2	1.3	2A	1.2	1.3	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
2a	1.3	1.4	2A	1.3	1.4	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
2a	1.4	1.5	2A	1.4	1.5	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
2a	1.5	1.6	2A	1.5	1.6	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No	L	Minimal	M	None	None	No
2a	1.6	1.7	2A	1.6	1.7	Bowl,CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFl,SOWL,TBeBat,WRBat,WYbC,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
2a	1.7	1.8	2A	1.7	1.8	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFl,SOWL,WRBat,WYbC,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
2a	1.8	1.9	2A	1.8	1.9	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFl,SOWL,WRBat,WYbC,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
2a	1.9	2	2A	1.9	2	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFl,SOWL,WRBat,WYbC,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
2a	2	2.1	2A	2	2.1	CACO,CaLL,CHL,CRBoa,LBV,PBat,PeFl,SOWL,WRBat,WYbC,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
2a	2.1	2.2	2A	2.1	2.2	BaEa,CACO,CaLL,CHL,CRBoa,LBV,MtKS,PBat,PeFl,SOWL,SRBoa,TPkMo,WePkMo,WRBat,WYbC,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
2a	2.2	2.3	2A	2.2	2.3	BaEa,CACO,CaLL,CHL,CRBoa,LBV,MtKS,PBat,PeFl,SOWL,SRBoa,TPkMo,WePkMo,WRBat,WYbC,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
2a	2.3	2.4	2A	2.3	2.4	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
2a	2.4	2.5	2A	2.4	2.5	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
2a	2.5	2.6	2A	2.5	2.6	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
2a	2.6	2.7	2A	2.6	2.7	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
2a	2.7	2.8	2A	2.7	2.8	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
2a	2.8	2.9	2A	2.8	2.9	CACO,PeFl,	Unknown	No	No	No	M	None	M	None	None	No
2a	2.9	3	2A	2.9	3	CACO,PeFl,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
2a	3	3.1	2A	3	3.1	CACO,PeFl,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
2a	3.1	3.2	2A	3.1	3.2	CACO,PeFl,	Unknown	No	No	No	M	None	M	None	None	No
2a	3.2	3.3	2A	3.2	3.3	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
2a	3.3	3.4	2A	3.3	3.4	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
2a	3.4	3.5	2A	3.4	3.5	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
2a	3.5	3.6	2A	3.5	3.6	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
2a	3.6	3.7	2A	3.6	3.7	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
2a	3.7	3.8	2A	3.7	3.8	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
2a	3.8	3.9	2A	3.8	3.9	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
2a	3.9	4	2A	3.9	4	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
2a	4	4.1	2A	4	4.1	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
2a	4.1	4.2	2A	4.1	4.2	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
2a	4.2	4.3	2A	4.2	4.3	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
2a	4.3	4.4	2A	4.3	4.4	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
2a	4.4	4.5	2A	4.4	4.5	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
2a	4.5	4.6	2A	4.5	4.6	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
2a	4.6	4.7	2A	4.6	4.7	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
2a	4.7	4.8	2A	4.7	4.8	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
2a	4.8	4.9	2A	4.8	4.9	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
2a	4.9	5	2A	4.9	5	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
2a	5	5.1	2A	5	5.1	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
2a	5.1	5.2	2A	5.1	5.2	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
2a	5.2	5.3	2A	5.2	5.3	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
2a	5.3	5.4	2A	5.3	5.4	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
2a	5.4	5.5	2A	5.4	5.5	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
2a	5.5	5.6	2A	5.5	5.6	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
2a	5.6	5.7	2A	5.6	5.7	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
2a	5.7	5.8	2A	5.7	5.8	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
2a	5.8	5.9	2A	5.8	5.9	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
2a	5.9	6	2A	5.9	6	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
2a	6	6.1	2A	6	6.1	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
2a	6.1	6.2	2A	6.1	6.2	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
2a	6.2	6.3	2A	6.2	6.3	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
2a	6.3	6.4	2A	6.3	6.4	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
2a	6.4	6.5	2A	6.4	6.5	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No		Maximum	H	None	None	No
2a	6.5	6.6	2A	6.5	6.6	BaEa,Bowl,CACO,CaLL,MtKS,PeFl,SRBoa,TBeBat,TPkMo,WePkMo,WRBat,	Unknown	Yes	No	No		Maximum	H	None	None	No
F2	0	0.1	3	40.7	40.8	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
F1	0	0.1	3	39.8	39.9	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
F1	0.1	0.2	3	39.9	40	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
F2	0.1	0.2	3	40.8	40.9	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
F1	0.2	0.3	3	40	40.1	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
F2	0.2	0.3	3	40.9	41	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
F1	0.3	0.4	3	40.1	40.2	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
F2	0.3	0.4	3	41	41.1	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
F1	0.4	0.5	3	40.2	40.3	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
F2	0.4	0.5	3	41.1	41.2	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
F1	0.5	0.6	3	40.3	40.4	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
F2	0.5	0.6	3	41.2	41.3	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
F1	0.6	0.7	3	40.4	40.5	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
F2	0.6	0.7	3	41.3	41.4	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
F1	0.7	0.8	3	40.5	40.6	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
F2	0.7	0.8	3	41.4	41.5	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
F1	0.8	0.8	3	40.6	40.7	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
F2	0.8	0.9	3	41.5	41.6	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
F2	0.9	1	3	41.6	41.7	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
F2	1	1.1	3	41.7	41.8	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
G	10.2	10.3	2,	50	50.1	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	NA	No	No		Minimal	L	None	None	No
G	10.3	10.4	2,	50.1	50.2	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	10.4	10.5	2,	50.2	50.3	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	10.5	10.6	2,	50.3	50.4	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	10.6	10.7	2,	50.4	50.5	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	10.7	10.8	2,	50.5	50.6	BaEa,Bowl,CACO,CaLL,MtKS,PeFl,SRBoa,TBeBat,TPkMo,WePkMo,WRBat,	Unknown	No	No	No		Moderate	M	None	None	No
G	10.8	10.9	2,	50.6	50.7	BaEa,Bowl,CACO,CaLL,MtKS,PeFl,SRBoa,TBeBat,TPkMo,WePkMo,WRBat,	Unknown	Yes	No	No		Maximum	H	None	PIMI3	No
G	10.9	11	2,	50.7	50.8	BaEa,Bowl,CACO,CaLL,MtKS,PeFl,SRBoa,TBeBat,TPkMo,WePkMo,WRBat,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	11	11.1	2, 2A	50.8	50.9	BaEa,Bowl,CACO,CaLL,MtKS,PeFl,SRBoa,TBeBat,TPkMo,WePkMo,WRBat,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	11.1	11.2	2, 2A	50.9	51	BaEa,Bowl,CACO,CaLL,MtKS,PeFl,SRBoa,TBeBat,TPkMo,WePkMo,WRBat,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	11.2	11.3	2, 2A	51	51.1	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No		Maximum	H	ROCO	CILA10, SPJU2	No
G	11.3	11.4	2, 2A	51.1	51.2	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	11.4	11.5	2, 2A	51.2	51.3	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	11.5	11.6	2, 2A	51.3	51.4	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	11.6	11.7	2, 2A	51.4	51.5	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No		Maximum	H	None	PIMI3	No
G	11.7	11.8	2, 2A	51.5	51.6	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No		Minimal	M	None	CISCRE, PIMI3, SPJU2	No
G	11.8	11.9	2, 2A	51.6	51.7	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No		Minimal	M	None	CISCRE, PIMI3, SPJU2	No
G	11.9	12	2, 2A	51.7	51.8	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No		Minimal	M	None	None	No
G	12	12.1	2, 2A	51.8	51.9	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	12.1	12.2	2, 2A	51.9	52	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	12.2	12.3	2, 2A	52	52.1	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	12.3	12.4	2, 2A	52.1	52.2	BaEa,Bowl,CACO,CaLL,MtKS,PeFl,SRBoa,TBeBat,TPkMo,WePkMo,WRBat,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	12.4	12.5	2, 2A	52.2	52.3	BaEa,Bowl,CACO,CaLL,CHL,CRBoa,MtKS,PBat,PeFl,SRBoa,TBeBat,TPkMo,WePkMo,WRBat,	Unknown	Yes	No	No		Maximum	H	SML	None	No
G	12.5	12.6	2, 2A	52.3	52.4	BaEa,Bowl,CACO,CaLL,CHL,CRBoa,MtKS,PBat,PeFl,SRBoa,TBeBat,TPkMo,WePkMo,WRBat,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	12.6	12.7	2, 2A	52.4	52.5	BaEa,Bowl,CACO,CaLL,CHL,CRBoa,MtKS,PBat,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	12.7	12.8	2, 2A	52.5	52.6	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No		Moderate	H	None	None	No
G	12.8	12.9	2, 2A	52.6	52.7	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No		Moderate	H	None	None	No
G	12.9	13	2, 2A	52.7	52.8	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No		Moderate	H	None	None	No
G	13	13.1	2, 2A	52.8	52.9	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	13.1	13.2	2, 2A	52.9	53	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No		Moderate	H	None	None	No
G	13.2	13.3	2, 2A	53	53.1	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No		Moderate	H	None	None	No
G	13.3	13.4	2, 2A	53.1	53.2	BaEa,Bowl,CACO,CaLL,CHL,CRBoa,MtKS,PBat,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No		Moderate	H	None	None	No
G	13.4	13.5	2, 2A	53.2	53.3	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No		Moderate	H	None	None	No
G	13.5	13.6	2, 2A	53.3	53.4	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	13.6	13.7	2, 2A	53.4	53.5	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	13.7	13.8	2, 2A	53.5	53.6	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No		Moderate	H	SML	None	No
G	13.8	13.9	2, 2A	53.6	53.7	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No		Moderate	H	SML	None	No
G	13.9	14	2, 2A	53.7	53.8	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No		Moderate	H	None	None	No
G	14	14.1	2, 2A	53.8	53.9	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No		Moderate	H	None	None	No
G	14.1	14.2	2, 2A	53.9	54	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No		Moderate	H	None	None	No
G	14.2	14.3	2, 2A	54	54.1	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No		Moderate	H	None	None	No
G	14.3	14.4	2, 2A	54.1	54.2	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No		Moderate	H	None	None	No
G	14.4	14.5	2, 2A	54.2	54.3	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	14.5	14.6	2, 2A	54.3	54.4	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No		Moderate	H	SML	None	No
G	14.6	14.7	2, 2A	54.4	54.5	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No		Moderate	H	None	None	No
G	14.7	14.8	2, 2A	54.5	54.6	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	SML	None	No
G	14.8	14.9	2, 2A	54.6	54.7	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No		Moderate	H	None	None	No
G	14.9	15	2, 2A	54.7	54.8	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No		Moderate	H	None	None	No
G	15	15.1	2, 2A	54.8	54.9	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No		Moderate	H	None	None	No
G	15.1	15.2	2, 2A	54.9	55	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
G	15.2	15.3	2, 2A	55	55.1	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	SML	None	No
G	15.3	15.4	2, 2A	55.1	55.2	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	SML	None	No
G	15.4	15.5	2, 2A	55.2	55.3	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	SML	SIMA3	No
G	15.5	15.6	2, 2A	55.3	55.4	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	None	SATR12	No
G	15.6	15.7	2, 2A	55.4	55.5	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	SML	CEME2, SATR12, SIOR4	No
G	15.7	15.8	2, 2A	55.5	55.6	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	SML	SIOR4	No
G	15.8	15.9	2, 2A	55.6	55.7	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	SML	BRTE	No
G	15.9	16	2, 2A	55.7	55.8	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	SML	None	No
G	16	16.1	2, 2A	55.8	55.9	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	SML	SIOR4	No
G	16.1	16.2	2, 2A	55.9	56	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	SML	None	No
G	16.2	16.3	2, 2A	56	56.1	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	SML	CEME2	No
G	16.3	16.4	2, 2A	56.1	56.2	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	None	SIOR4	No
G	16.4	16.5	2, 2A	56.2	56.3	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	SML	SIOR4	No
G	16.5	16.6	2, 2A	56.3	56.4	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	16.6	16.7	2, 2A	56.4	56.5	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	16.7	16.8	2, 2A	56.5	56.6	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	16.8	16.9	2, 2A	56.6	56.7	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No		Moderate	M	None	None	No
G	16.9	17	2, 2A	56.7	56.8	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No		Moderate	M	None	None	No
G	17	17.1	2, 2A	56.8	56.9	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No		Moderate	H	None	None	No
G	17.1	17.2	2, 2A	56.9	57	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No		Moderate	H	None	None	No
G	17.2	17.3	2, 2A	57	57.1	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	SJBT	None	No
G	17.3	17.4	2, 2A	57.1	57.2	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	SJBT	None	No
G	17.4	17.5	2, 2A	57.2	57.3	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	SJBT	None	No
G	17.5	17.6	2, 2A	57.3	57.4	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	17.6	17.7	2, 2A	57.4	57.5	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	17.7	17.8	2, 2A	57.5	57.6	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	17.8	17.9	2, 2A	57.6	57.7	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	17.9	18	2, 2A	57.7	57.8	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	18	18.1	2, 2A	57.8	57.9	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No		Moderate	M	None	SIOR4	No
G	18.1	18.2	2, 2A	57.9	58	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No		Moderate	M	SJBT	None	No
G	18.2	18.3	2, 2A	58	58.1	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	None	SIAL2	No
G	18.3	18.4	2, 2A	58.1	58.2	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	None	CEME2, SIOR4	No
G	18.4	18.5	2, 2A	58.2	58.3	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	18.5	18.6	2, 2A	58.3	58.4	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No		Moderate	M	None	None	No
G	18.6	18.7	2, 2A	58.4	58.5	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	18.7	18.8	2, 2A	58.5	58.6	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No		Moderate	M	None	SIOR4	No
G	18.8	18.9	2, 2A	58.6	58.7	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No		Moderate	M	None	SIOR4	No
G	18.9	19	2, 2A	58.7	58.8	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	None	SIOR4	No
G	19	19.1	2, 2A	58.8	58.9	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	SJBT	CEME2, TARA	No
G	19.1	19.2	2, 2A	58.9	59	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	No	No		Maximum	H	SJBT	NIGL, SIOR4	No
G	19.2	19.3	2, 2A	59	59.1	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,TPkMo, WePkMo,WYbC,	Unknown	Yes	No	No		Maximum	H	None	CEME2	No
G	19.3	19.4	2, 2A	59.1	59.2	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,TPkMo, WePkMo,WYbC,	Unknown	No	No	No		Moderate	M	None	None	No
G	19.4	19.5	2, 2A	59.2	59.3	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,TPkMo, WePkMo,WYbC,	Unknown	No	No	No		Moderate	M	None	None	No
G	19.5	19.6	2, 2A	59.3	59.4	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,TPkMo, WePkMo,WYbC,	Unknown	No	No	No		Moderate	M	None	None	No
G	19.6	19.7	2, 2A	59.4	59.5	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,TPkMo, WePkMo,WYbC,	Unknown	No	No	No		Moderate	M	None	None	No
G	19.7	19.8	2, 2A	59.5	59.6	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,TPkMo, WePkMo,WYbC,	Unknown	No	No	No		Moderate	M	None	None	No
G	19.8	19.9	2, 2A	59.6	59.7	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No		None	NI	SJBT	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
G	1.3	1.4	2, 2A	41.1	41.2	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
G	1.4	1.5	2, 2A	41.2	41.3	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No		Moderate	M	None	None	No
G	1.5	1.6	2, 2A	41.3	41.4	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No		Moderate	M	None	None	No
G	1.6	1.7	2, 2A	41.4	41.5	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No		Moderate	M	None	None	No
G	1.7	1.8	2, 2A	41.5	41.6	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No		Moderate	M	None	None	No
G	1.8	1.9	2, 2A	41.6	41.7	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No		Moderate	M	None	None	No
G	1.9	2	2, 2A	41.7	41.8	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No		Moderate	M	None	None	No
G	2	2.1	2, 2A	41.8	41.9	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No		Moderate	M	None	None	No
G	2.1	2.2	2, 2A	41.9	42	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No		Moderate	M	None	None	No
G	2.2	2.3	2, 2A	42	42.1	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No		Moderate	M	None	None	No
G	2.3	2.4	2, 2A	42.1	42.2	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No		Moderate	M	None	None	No
G	2.4	2.5	2, 2A	42.2	42.3	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No		Moderate	M	None	None	No
G	2.5	2.6	2, 2A	42.3	42.4	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No		Moderate	M	None	None	No
G	2.6	2.7	2, 2A	42.4	42.5	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No		Moderate	M	None	None	No
G	2.7	2.8	2, 2A	42.5	42.6	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No		Moderate	M	None	None	No
G	2.8	2.9	2, 2A	42.6	42.7	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No		Minimal	L	None	None	No
G	2.9	3	2, 2A	42.7	42.8	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No		Moderate	M	None	None	No
G	3	3.1	2, 2A	42.8	42.9	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No		Moderate	M	None	None	No
G	3.1	3.2	2, 2A	42.9	43	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No		Moderate	M	None	None	No
G	3.2	3.3	2, 2A	43	43.1	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No		Moderate	M	None	None	No
G	3.3	3.4	2, 2A	43.1	43.2	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No		Moderate	M	None	None	No
G	3.4	3.5	2, 2A	43.2	43.3	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No		Moderate	M	None	None	No
G	3.5	3.6	2, 2A	43.3	43.4	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No		Moderate	M	None	None	No
G	3.6	3.7	2, 2A	43.4	43.5	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No		Moderate	M	None	None	No
G	3.7	3.8	2, 2A	43.5	43.6	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No		Moderate	M	None	None	No
G	3.8	3.9	2, 2A	43.6	43.7	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No		Moderate	M	None	None	No
G	3.9	4	2, 2A	43.7	43.8	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No		Maximum	H	None	None	No
G	4	4.1	2, 2A	43.8	43.9	BaEa,BHS,Bowl,CACO,CaLL,CHL,CRLF,LAPkMo,MOGS,MtKS,PeFl,RFS,RnSn,SRBoa,SwHk,SwPT,TPkMo,WePkMo,WRBat,	Unknown	NA	No	No		Maximum	H	None	None	No
G	4.1	4.2	2, 2A	43.9	44	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No		Maximum	H	None	None	No
G	4.2	4.3	2, 2A	44	44.1	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No		Maximum	H	None	None	No
G	4.3	4.4	2, 2A	44.1	44.2	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No		Maximum	H	None	None	No
G	4.4	4.5	2, 2A	44.2	44.3	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No		Maximum	H	None	None	No
G	4.5	4.6	2, 2A	44.3	44.4	BaEa,BHS,Bowl,CACO,CaLL,MtKS,PeFl,RFS,RnSn,SRBoa,SwHk,TBeBat,TPkMo,WePkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No		Maximum	H	None	None	No
G	4.6	4.7	2, 2A	44.4	44.5	BaEa,BHS,Bowl,CACO,CaLL,MtKS,PeFl,RFS,RnSn,SRBoa,SwHk,TBeBat,TPkMo,WePkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No		Maximum	H	None	None	No
G	4.7	4.8	2, 2A	44.5	44.6	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No		Maximum	H	None	None	No
G	4.8	4.9	2, 2A	44.6	44.7	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No		Maximum	H	None	None	No
G	4.9	5	2, 2A	44.7	44.8	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No		Maximum	H	None	None	No
G	5	5.1	2, 2A	44.8	44.9	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No		Maximum	H	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
G	5.1	5.2	2, 2A	44.9	45	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No		Maximum	H	None	None	No
G	5.2	5.3	2, 2A	45	45.1	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No		Maximum	H	None	None	No
G	5.3	5.4	2, 2A	45.1	45.2	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No		Maximum	H	None	None	No
G	5.4	5.5	2, 2A	45.2	45.3	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No		Maximum	H	None	None	No
G	5.5	5.6	2, 2A	45.3	45.4	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No		Maximum	H	None	None	No
G	5.6	5.7	2, 2A	45.4	45.5	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No		Maximum	H	None	None	No
G	5.7	5.8	2, 2A	45.5	45.6	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No		Maximum	H	None	None	No
G	5.8	5.9	2, 2A	45.6	45.7	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No		Minimal	L	None	None	No
G	5.9	6	2, 2A	45.7	45.8	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No		Minimal	L	None	None	No
G	6	6.1	2, 2A	45.8	45.9	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No		Minimal	L	None	None	No
G	6.1	6.2	2, 2A	45.9	46	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	Unknown	NA	No	No		Minimal	L	None	None	No
G	6.2	6.3	2,	46	46.1	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No		Minimal	L	None	None	No
G	6.3	6.4	2,	46.1	46.2	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No		Maximum	H	SJBT	None	No
G	6.4	6.5	2,	46.2	46.3	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	6.5	6.6	2,	46.3	46.4	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No		Minimal	L	None	None	No
G	6.6	6.7	2,	46.4	46.5	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No		Minimal	L	None	None	No
G	6.7	6.8	2,	46.5	46.6	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No		Minimal	L	None	CNBE, PIMI3	No
G	6.8	6.9	2,	46.6	46.7	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No		Minimal	L	None	CNBE	No
G	6.9	7	2,	46.7	46.8	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	7	7.1	2,	46.8	46.9	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No		Minimal	L	None	None	No
G	7.1	7.2	2,	46.9	47	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No		Minimal	L	None	None	No
G	7.2	7.3	2,	47	47.1	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	7.3	7.4	2,	47.1	47.2	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	7.4	7.5	2,	47.2	47.3	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	7.5	7.6	2,	47.3	47.4	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No		Maximum	H	None	PIMI3, SATR12	No
G	7.6	7.7	2,	47.4	47.5	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No		Minimal	L	None	None	No
G	7.7	7.8	2,	47.5	47.6	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No		Minimal	L	None	None	No
G	7.8	7.9	2,	47.6	47.7	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No		Minimal	L	None	None	No
G	7.9	8	2,	47.7	47.8	BaEa,Bowl,CACO,CaLL,MtKS,PeFl,SRBoa,TBeBat,TPkMo,WePkMo,WRBat,	Unknown	No	No	No		Moderate	M	None	None	No
G	8	8.1	2,	47.8	47.9	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No		Moderate	M	None	None	No
G	8.1	8.2	2,	47.9	48	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No		Moderate	M	None	CNBE	No
G	8.2	8.3	2,	48	48.1	BaEa,Bowl,CACO,CaLL,MtKS,PeFl,SRBoa,TBeBat,TPkMo,WePkMo,WRBat,	Unknown	No	No	No		Moderate	M	None	CNBE	No
G	8.3	8.4	2,	48.1	48.2	BaEa,Bowl,CACO,CaLL,MtKS,PeFl,SRBoa,TBeBat,TPkMo,WePkMo,WRBat,	Unknown	No	No	No		Moderate	M	None	CNBE	No
G	8.4	8.5	2,	48.2	48.3	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No		Minimal	L	None	None	No
G	8.5	8.6	2,	48.3	48.4	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No		Minimal	L	None	None	No
G	8.6	8.7	2,	48.4	48.5	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	NA	No	No		Minimal	L	None	None	No
G	8.7	8.8	2,	48.5	48.6	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	NA	No	No		Minimal	L	None	None	No
G	8.8	8.9	2,	48.6	48.7	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	NA	No	No		Minimal	L	None	None	No
G	8.9	9	2,	48.7	48.8	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	NA	No	No		Minimal	L	None	None	No
G	9	9.1	2,	48.8	48.9	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	NA	No	No		Minimal	L	None	None	No
G	9.1	9.2	2,	48.9	49	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	NA	No	No		Minimal	L	None	None	No
G	9.2	9.3	2,	49	49.1	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No		Minimal	L	None	None	No
G	9.3	9.4	2,	49.1	49.2	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No		Minimal	L	None	None	No
G	9.4	9.5	2,	49.2	49.3	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	9.5	9.6	2,	49.3	49.4	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	9.6	9.7	2,	49.4	49.5	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	9.7	9.8	2,	49.5	49.6	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	Yes	No	No		Maximum	H	None	None	No
G	9.8	9.9	2,	49.6	49.7	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No		Minimal	L	None	None	No
G	9.9	10	2,	49.7	49.8	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	No	No	No		Minimal	L	None	None	No
G	10	10.1	2,	49.8	49.9	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	NA	No	No		Minimal	L	None	None	No
G	10.1	10.2	2,	49.9	50	Bowl,CACO,PeFl,TBeBat,WRBat,	Unknown	NA	No	No		Maximum	H	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
E	4.4	4.5	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	4.5	4.6	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	4.6	4.7	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	4.7	4.8	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	4.8	4.9	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	4.9	5	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	5	5.1	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	5.1	5.2	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	5.2	5.3	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	5.3	5.4	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	5.4	5.5	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	5.5	5.6	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	5.6	5.7	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	5.7	5.8	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	5.8	5.9	None			BHS,Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
E	5.9	6	None			BHS,Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
E	6	6.1	None			Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
E	6.1	6.2	None			Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
E	6.2	6.3	None			Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
E	6.3	6.4	None			Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
E	6.4	6.5	None			Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
E	6.5	6.6	None			BHS,Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
E	6.6	6.7	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	6.7	6.8	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	6.8	6.9	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	6.9	7	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	7	7.1	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	7.1	7.2	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	7.2	7.3	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	7.3	7.4	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	7.4	7.5	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	7.5	7.6	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	7.6	7.7	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	7.7	7.8	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	7.8	7.9	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	7.9	8	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	8	8.1	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	8.1	8.2	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	8.2	8.3	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	8.3	8.4	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	8.4	8.5	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	8.5	8.6	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
E	8.6	8.7	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	8.7	8.8	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	8.8	8.9	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	8.9	9	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	9	9.1	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	9.1	9.2	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	9.2	9.3	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	9.3	9.4	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	9.4	9.5	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	9.5	9.6	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	9.6	9.7	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	9.7	9.8	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	9.8	9.9	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	9.9	10	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	10	10.1	None			BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	10.1	10.2	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Maximum	H	None	None	No
E	10.2	10.3	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	10.3	10.4	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	10.4	10.5	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	10.5	10.6	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	10.6	10.7	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	10.7	10.8	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	10.8	10.9	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	10.9	11	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	11	11.1	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	11.1	11.2	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	11.2	11.3	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
G	0	0.1	2, 2A	39.8	39.9	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
G	0.1	0.2	2, 2A	39.9	40	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
G	0.2	0.3	2, 2A	40	40.1	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
G	0.3	0.4	2, 2A	40.1	40.2	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
G	0.4	0.5	2, 2A	40.2	40.3	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
G	0.5	0.6	2, 2A	40.3	40.4	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
G	0.6	0.7	2, 2A	40.4	40.5	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
G	0.7	0.8	2, 2A	40.5	40.6	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
G	0.8	0.9	2, 2A	40.6	40.7	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
G	0.9	1	2, 2A	40.7	40.8	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
G	1	1.1	2, 2A	40.8	40.9	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
G	1.1	1.2	2, 2A	40.9	41	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
G	1.2	1.3	2, 2A	41	41.1	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
D	43.1	43.2	1	78.1	78.2	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	No	No	No	L	Moderate	H	None	CEME2	No
D	43.2	43.3	1	78.2	78.3	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	Yes	No	No	L	Maximum	H	None	CEME2	No
D	43.3	43.4	1	78.3	78.4	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
D	43.4	43.5	1	78.4	78.5	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	No	No	No	L	Moderate	H	None	None	No
D	43.5	43.6	1	78.5	78.6	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	No	No	No	L	Moderate	H	None	None	No
D	43.6	43.7	1	78.6	78.7	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	No	No	No	L	Moderate	H	None	None	No
D	43.7	43.8	1	78.7	78.8	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
D	43.8	43.9	1	78.8	78.9	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
D	43.9	44	1	78.9	79	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
D	44	44.1	1	79	79.1	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
D	44.1	44.2	1	79.1	79.2	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	No	No	No	M	Moderate	H	None	CEME2, MEIN2	No
D	44.2	44.3	1	79.2	79.3	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
D	44.3	44.4	1	79.3	79.4	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	Yes	No	No	M	Maximum	H	None	CEME2	No
D	44.4	44.5	1	79.4	79.5	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
D	44.5	44.6	1	79.5	79.6	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	No	No	No	M	Moderate	H	None	CEME2, MEIN2	No
D	44.6	44.7	1	79.6	79.7	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
D	44.7	44.8	1	79.7	79.8	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
D	44.8	44.9	1	79.8	79.9	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	No	No	No	M	Moderate	H	None	CEME2, MEIN2	No
D	44.9	45	1	79.9	80	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
D	45	45.1	1	80	80.1	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
D	45.1	45.2	1	80.1	80.2	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	No	No	No	M	Moderate	H	None	CEME2	No
D	45.2	45.3	1	80.2	80.3	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
D	45.3	45.4	1	80.3	80.4	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	NA	No	No	M	Moderate	H	None	None	No
D	45.4	45.5	1	80.4	80.5	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	NA	No	No	M	Moderate	H	None	None	No
D	45.5	45.6	1	80.5	80.6	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	NA	No	No	M	Moderate	H	None	None	No
D	45.6	45.7	1	80.6	80.7	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	NA	No	No	M	Moderate	H	None	None	No
D	45.7	45.8	1	80.7	80.8	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	NA	No	No	M	Moderate	H	None	None	No
D	45.8	45.9	1	80.8	80.9	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	NA	No	No	M	Moderate	H	None	None	No
D	45.9	46	1	80.9	81	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	NA	No	No	M	Moderate	M	None	None	No
D	46	46.1	1	81	81.1	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	NA	No	No	M	Moderate	M	None	None	No
D	46.1	46.2	1	81.1	81.2	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	NA	No	No	M	Maximum	H	None	None	No
D	46.2	46.3	1	81.2	81.3	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
D	46.3	46.4	1	81.3	81.4	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	M	Maximum	H	None	None	No
D	46.4	46.5	1	81.4	81.5	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
D	46.5	46.6	1	81.5	81.6	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
D	46.6	46.7	1	81.6	81.7	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
D	46.7	46.8	1	81.7	81.8	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
D	46.8	46.9	1	81.8	81.9	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	M	None	M	None	None	No
D	46.9	47	1	81.9	82	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
D	47	47.1	1	82	82.1	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	M	Moderate	M	SJBT	None	No
D	47.1	47.2	1	82.1	82.2	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	Moderate	M	SJBT	None	No
D	47.2	47.3	1	82.2	82.3	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	No	No	No	L	Moderate	H	SJBT	None	No
D	47.3	47.4	1	82.3	82.4	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	No	No	No	L	Moderate	H	SJBT	None	No
D	47.4	47.5	1	82.4	82.5	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	No	No	No	L	Moderate	M	SJBT	None	No
D	47.5	47.6	1	82.5	82.6	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	Moderate	M	SJBT	None	No
D	47.6	47.7	1	82.6	82.7	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	None	L	SJBT	None	No
D	47.7	47.8	1	82.7	82.8	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	None	H	SJBT	None	No
D	47.8	47.9	1	82.8	82.9	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	Moderate	H	SJBT	NIGL	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
D	47.9	48	1	82.9	83	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
D	48	48.1	1	83	83.1	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	Yes	No	No	L	Maximum	H	None	None	No
D	48.1	48.2	1	83.1	83.2	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	No	No	L	None	L	None	None	No
E	0	0.1	None			Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	0.1	0.2	None			Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	0.2	0.3	None			Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	0.3	0.4	None			Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	0.4	0.5	None			Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	0.5	0.6	None			Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	0.6	0.7	None			Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	0.7	0.8	None			Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	0.8	0.9	None			Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	0.9	1	None			Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	1	1.1	None			Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	1.1	1.2	None			Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	1.2	1.3	None			Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	1.3	1.4	None			Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	1.4	1.5	None			Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	1.5	1.6	None			Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	1.6	1.7	None			BHS,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	1.7	1.8	None			BHS,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	1.8	1.9	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	1.9	2	None			BHS,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	2	2.1	None			BHS,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
E	2.1	2.2	None			BHS,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
E	2.2	2.3	None			BHS,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
E	2.3	2.4	None			BHS,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
E	2.4	2.5	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
E	2.5	2.6	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
E	2.6	2.7	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
E	2.7	2.8	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
E	2.8	2.9	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
E	2.9	3	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
E	3	3.1	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
E	3.1	3.2	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
E	3.2	3.3	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
E	3.3	3.4	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
E	3.4	3.5	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
E	3.5	3.6	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
E	3.6	3.7	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
E	3.7	3.8	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
E	3.8	3.9	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
E	3.9	4	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
E	4	4.1	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
E	4.1	4.2	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	4.2	4.3	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
E	4.3	4.4	None			BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
D	34.3	34.4	1	69.3	69.4	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
D	34.4	34.5	1	69.4	69.5	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	34.5	34.6	1	69.5	69.6	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	34.6	34.7	1	69.6	69.7	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	34.7	34.8	1	69.7	69.8	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	Yes	Yes	No	M	Maximum	H	None	None	No
D	34.8	34.9	1	69.8	69.9	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	NA	Yes	No	M	Moderate	H	None	None	No
D	34.9	35	1	69.9	70	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	NA	Yes	No	M	Moderate	H	None	None	No
D	35	35.1	1	70	70.1	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	NA	Yes	No	M	Moderate	H	None	None	No
D	35.1	35.2	1	70.1	70.2	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,TPkMo, WePkMo,WYbC,	Unknown	NA	Yes	No	M	Moderate	H	None	None	No
D	35.2	35.3	1	70.2	70.3	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,TPkMo, WePkMo,WYbC,	Unknown	NA	Yes	No	M	Moderate	H	None	None	No
D	35.3	35.4	1	70.3	70.4	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	M	Moderate	M	None	None	No
D	35.4	35.5	1	70.4	70.5	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	M	Moderate	M	None	None	No
D	35.5	35.6	1	70.5	70.6	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,TPkMo, WePkMo,WYbC,	Unknown	NA	Yes	No	M	Moderate	M	None	None	No
D	35.6	35.7	1	70.6	70.7	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,TPkMo, WePkMo,WYbC,	Unknown	NA	Yes	No	M	Moderate	M	None	None	No
D	35.7	35.8	1	70.7	70.8	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	Yes	No	M	Moderate	M	None	None	No
D	35.8	35.9	1	70.8	70.9	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	Yes	No	M	Moderate	M	None	None	No
D	35.9	36	1	70.9	71	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	M	Moderate	M	None	None	No
D	36	36.1	1	71	71.1	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	M	Moderate	M	None	None	No
D	36.1	36.2	1	71.1	71.2	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	Yes	No	M	Moderate	M	None	None	No
D	36.2	36.3	1	71.2	71.3	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	Yes	No	M	Moderate	M	None	None	No
D	36.3	36.4	1	71.3	71.4	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	36.4	36.5	1	71.4	71.5	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	36.5	36.6	1	71.5	71.6	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	Yes	Yes	No	M	Maximum	H	None	None	No
D	36.6	36.7	1	71.6	71.7	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	Yes	Yes	No	M	Maximum	H	None	None	No
D	36.7	36.8	1	71.7	71.8	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	36.8	36.9	1	71.8	71.9	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,TPkMo, WePkMo,WYbC,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	36.9	37	1	71.9	72	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,TPkMo, WePkMo,WYbC,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	37	37.1	1	72	72.1	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFI,TPkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	37.1	37.2	1	72.1	72.2	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,TPkMo, WePkMo,WYbC,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	37.2	37.3	1	72.2	72.3	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,TPkMo, WePkMo,WYbC,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	37.3	37.4	1	72.3	72.4	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,TPkMo, WePkMo,WYbC,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	37.4	37.5	1	72.4	72.5	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,TPkMo, WePkMo,WYbC,	Unknown	NA	Yes	No	M	Moderate	H	None	None	No
D	37.5	37.6	1	72.5	72.6	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,TPkMo, WePkMo,WYbC,	Unknown	NA	Yes	No	M	Moderate	H	None	None	No
D	37.6	37.7	1	72.6	72.7	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,TPkMo, WePkMo,WYbC,	Unknown	NA	Yes	No	M	Moderate	H	None	None	No
D	37.7	37.8	1	72.7	72.8	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,TPkMo, WePkMo,WYbC,	Unknown	NA	Yes	No	M	Moderate	H	None	None	No
D	37.8	37.9	1	72.8	72.9	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,TPkMo, WePkMo,WYbC,	Unknown	NA	Yes	No	M	Moderate	H	None	None	No
D	37.9	38	1	72.9	73	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,TPkMo, WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
D	38	38.1	1	73	73.1	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,TPkMo, WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
D	38.1	38.2	1	73.1	73.2	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFI,RFS,TPkMo, WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
D	38.2	38.3	1	73.2	73.3	BHS,CACO,LAPkMo,LBV,MtKS,PeFI,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
D	38.3	38.4	1	73.3	73.4	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
D	38.4	38.5	1	73.4	73.5	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
D	38.5	38.6	1	73.5	73.6	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
D	38.6	38.7	1	73.6	73.7	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
D	38.7	38.8	1	73.7	73.8	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
D	38.8	38.9	1	73.8	73.9	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
D	38.9	39	1	73.9	74	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
D	39	39.1	1	74	74.1	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
D	39.1	39.2	1	74.1	74.2	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
D	39.2	39.3	1	74.2	74.3	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
D	39.3	39.4	1	74.3	74.4	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
D	39.4	39.5	1	74.4	74.5	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
D	39.5	39.6	1	74.5	74.6	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	Yes	No	H	Moderate	H	None	None	No
D	39.6	39.7	1	74.6	74.7	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	None	H	None	None	No
D	39.7	39.8	1	74.7	74.8	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	None	H	None	None	No
D	39.8	39.9	1	74.8	74.9	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	None	H	None	None	No
D	39.9	40	1	74.9	75	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	None	H	None	None	No
D	40	40.1	1	75	75.1	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	None	H	None	None	No
D	40.1	40.2	1	75.1	75.2	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	None	H	None	None	No
D	40.2	40.3	1	75.2	75.3	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	None	H	None	None	No
D	40.3	40.4	1	75.3	75.4	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	None	H	None	None	No
D	40.4	40.5	1	75.4	75.5	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	None	H	None	None	No
D	40.5	40.6	1	75.5	75.6	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	None	H	None	None	No
D	40.6	40.7	1	75.6	75.7	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	None	H	None	None	No
D	40.7	40.8	1	75.7	75.8	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	None	H	None	None	No
D	40.8	40.9	1	75.8	75.9	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	None	H	None	None	No
D	40.9	41	1	75.9	76	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	None	H	None	None	No
D	41	41.1	1	76	76.1	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	None	H	None	None	No
D	41.1	41.2	1	76.1	76.2	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	None	H	None	None	No
D	41.2	41.3	1	76.2	76.3	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	None	H	None	None	No
D	41.3	41.4	1	76.3	76.4	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	None	H	None	None	No
D	41.4	41.5	1	76.4	76.5	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	None	H	None	None	No
D	41.5	41.6	1	76.5	76.6	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	Maximum	H	None	None	No
D	41.6	41.7	1	76.6	76.7	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	None	H	None	None	No
D	41.7	41.8	1	76.7	76.8	BHS,Bowl,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TBeBat,TPkMo,WePkMo,WRBat,WYbC,	Unknown	NA	No	No	H	Minimal	H	None	None	No
D	41.8	41.9	1	76.8	76.9	BHS,Bowl,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TBeBat,TPkMo,WePkMo,WRBat,WYbC,	Unknown	NA	No	No	H	Minimal	H	None	None	No
D	41.9	42	1	76.9	77	BHS,Bowl,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TBeBat,TPkMo,WePkMo,WRBat,WYbC,	Unknown	NA	No	No	H	Minimal	H	None	None	No
D	42	42.1	1	77	77.1	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	None	H	None	None	No
D	42.1	42.2	1	77.1	77.2	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	None	H	None	None	No
D	42.2	42.3	1	77.2	77.3	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	None	H	None	None	No
D	42.3	42.4	1	77.3	77.4	BHS,CACO,LAPkMo,LBV,MtKS,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	None	H	None	None	No
D	42.4	42.5	1	77.4	77.5	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	Moderate	H	None	None	No
D	42.5	42.6	1	77.5	77.6	BaEa,BHS,Bowl,CACO,CHL,CRBoa,LAPkMo,LBV,MtKS,PBat,PeFl,RFS,TPkMo,WePkMo,WYbC,	Unknown	NA	No	No	H	Moderate	H	None	None	No
D	42.6	42.7	1	77.6	77.7	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	NA	No	No	H	Moderate	H	None	None	No
D	42.7	42.8	1	77.7	77.8	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	NA	No	No	H	Moderate	H	None	None	No
D	42.8	42.9	1	77.8	77.9	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	NA	No	No	H	Moderate	H	None	None	No
D	42.9	43	1	77.9	78	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	NA	No	No	H	Moderate	H	None	CEME2	No
D	43	43.1	1	78	78.1	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	NA	No	No	H	Moderate	H	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
D	24.1	24.2	1	59.1	59.2	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	Yes	No	L	Maximum	H	None	None	No
D	24.2	24.3	1	59.2	59.3	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	Yes	No	L	Maximum	H	None	None	No
D	24.3	24.4	1	59.3	59.4	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	24.4	24.5	1	59.4	59.5	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	24.5	24.6	1	59.5	59.6	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	24.6	24.7	1	59.6	59.7	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	Yes	No	L	Maximum	H	None	None	No
D	24.7	24.8	1	59.7	59.8	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	24.8	24.9	1	59.8	59.9	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	24.9	25	1	59.9	60	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	25	25.1	1	60	60.1	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	25.1	25.2	1	60.1	60.2	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	25.2	25.3	1	60.2	60.3	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	Yes	No	M	Maximum	H	None	None	No
D	25.3	25.4	1	60.3	60.4	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	Yes	No	M	Maximum	H	None	None	No
D	25.4	25.5	1	60.4	60.5	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	25.5	25.6	1	60.5	60.6	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	Yes	No	M	Maximum	H	None	None	No
D	25.6	25.7	1	60.6	60.7	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	Yes	No	M	Maximum	H	None	None	No
D	25.7	25.8	1	60.7	60.8	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	Yes	No	M	Maximum	H	None	None	No
D	25.8	25.9	1	60.8	60.9	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	Yes	No	M	Maximum	H	None	None	No
D	25.9	26	1	60.9	61	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	26	26.1	1	61	61.1	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	M	Moderate	H	None	SATR12	No
D	26.1	26.2	1	61.1	61.2	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	26.2	26.3	1	61.2	61.3	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	Yes	No	M	Maximum	H	None	None	No
D	26.3	26.4	1	61.3	61.4	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	26.4	26.5	1	61.4	61.5	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	26.5	26.6	1	61.5	61.6	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	26.6	26.7	1	61.6	61.7	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	Yes	No	M	Maximum	H	None	None	No
D	26.7	26.8	1	61.7	61.8	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	Yes	No	M	Maximum	H	None	None	No
D	26.8	26.9	1	61.8	61.9	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	Yes	No	M	Maximum	H	None	None	No
D	26.9	27	1	61.9	62	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	Yes	No	M	Maximum	H	None	None	No
D	27	27.1	1	62	62.1	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	27.1	27.2	1	62.1	62.2	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	27.2	27.3	1	62.2	62.3	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	27.3	27.4	1	62.3	62.4	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	27.4	27.5	1	62.4	62.5	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	27.5	27.6	1	62.5	62.6	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	Yes	No	M	Maximum	H	None	None	No
D	27.6	27.7	1	62.6	62.7	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	27.7	27.8	1	62.7	62.8	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	27.8	27.9	1	62.8	62.9	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	27.9	28	1	62.9	63	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	H	Moderate	H	None	None	No
D	28	28.1	1	63	63.1	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	Yes	No	H	Maximum	H	None	None	No
D	28.1	28.2	1	63.1	63.2	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	Yes	No	H	Maximum	H	None	None	No
D	28.2	28.3	1	63.2	63.3	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	Yes	No	H	Maximum	H	None	None	No
D	28.3	28.4	1	63.3	63.4	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	H	Moderate	H	None	None	No
D	28.4	28.5	1	63.4	63.5	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	H	Moderate	H	None	None	No
D	28.5	28.6	1	63.5	63.6	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	H	Moderate	H	None	None	No
D	28.6	28.7	1	63.6	63.7	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	Yes	No	H	Maximum	H	None	None	No
D	28.7	28.8	1	63.7	63.8	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	Yes	No	H	Maximum	H	None	None	No
D	28.8	28.9	1	63.8	63.9	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	Yes	No	H	Moderate	H	None	None	No
D	28.9	29	1	63.9	64	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	Yes	No	H	Maximum	H	None	None	No
D	29	29.1	1	64	64.1	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	Yes	No	H	Maximum	H	None	None	No
D	29.1	29.2	1	64.1	64.2	BaEa,Bowl,CACO,CaLL,CHL,CRBoa,MtKS,PBat,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	Yes	No	M	Maximum	H	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
D	29.2	29.3	1	64.2	64.3	BaEa,Bowl,CACO,CaLL,CHL,CRBoa,MtKS,PBat,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	Yes	No	M	Maximum	H	None	None	No
D	29.3	29.4	1	64.3	64.4	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	Yes	No	M	Maximum	H	None	None	No
D	29.4	29.5	1	64.4	64.5	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	Yes	No	M	Maximum	H	None	None	No
D	29.5	29.6	1	64.5	64.6	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	29.6	29.7	1	64.6	64.7	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	29.7	29.8	1	64.7	64.8	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	Yes	No	M	Maximum	H	None	None	No
D	29.8	29.9	1	64.8	64.9	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	Yes	No	M	Maximum	H	None	None	No
D	29.9	30	1	64.9	65	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	30	30.1	1	65	65.1	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	30.1	30.2	1	65.1	65.2	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	30.2	30.3	1	65.2	65.3	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	M	Maximum	H	None	None	No
D	30.3	30.4	1	65.3	65.4	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	Yes	No	M	Maximum	H	None	None	No
D	30.4	30.5	1	65.4	65.5	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	30.5	30.6	1	65.5	65.6	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	30.6	30.7	1	65.6	65.7	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	30.7	30.8	1	65.7	65.8	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	30.8	30.9	1	65.8	65.9	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	30.9	31	1	65.9	66	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	Yes	No	M	Maximum	H	None	None	No
D	31	31.1	1	66	66.1	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	31.1	31.2	1	66.1	66.2	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	31.2	31.3	1	66.2	66.3	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	31.3	31.4	1	66.3	66.4	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	31.4	31.5	1	66.4	66.5	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	31.5	31.6	1	66.5	66.6	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	31.6	31.7	1	66.6	66.7	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	31.7	31.8	1	66.7	66.8	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	31.8	31.9	1	66.8	66.9	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	Yes	No	L	Maximum	H	None	None	No
D	31.9	32	1	66.9	67	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	Yes	No	L	Maximum	H	None	None	No
D	32	32.1	1	67	67.1	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	32.1	32.2	1	67.1	67.2	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	32.2	32.3	1	67.2	67.3	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	32.3	32.4	1	67.3	67.4	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	32.4	32.5	1	67.4	67.5	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	32.5	32.6	1	67.5	67.6	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	32.6	32.7	1	67.6	67.7	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	32.7	32.8	1	67.7	67.8	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	Yes	No	L	Maximum	H	None	None	No
D	32.8	32.9	1	67.8	67.9	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	Yes	No	L	Maximum	H	None	None	No
D	32.9	33	1	67.9	68	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	33	33.1	1	68	68.1	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	33.1	33.2	1	68.1	68.2	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	33.2	33.3	1	68.2	68.3	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	33.3	33.4	1	68.3	68.4	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	33.4	33.5	1	68.4	68.5	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	33.5	33.6	1	68.5	68.6	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	33.6	33.7	1	68.6	68.7	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	L	Moderate	H	None	None	No
D	33.7	33.8	1	68.7	68.8	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	Yes	No	L	Maximum	H	None	None	No
D	33.8	33.9	1	68.8	68.9	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	Yes	No	L	Maximum	H	None	None	No
D	33.9	34	1	68.9	69	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	Yes	Yes	No	M	Maximum	H	None	None	No
D	34	34.1	1	69	69.1	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	34.1	34.2	1	69.1	69.2	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	Yes	No	M	Moderate	H	None	None	No
D	34.2	34.3	1	69.2	69.3	BaEa,Bowl,CACO,CHL,CRBoa,PBat,PeFl,TPkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
D	16.6	16.7	1	51.6	51.7	BaEa,BHS,Bowl,CACO,CaLL,CHL,CRLF,LAPkMo,MOGS,MtKS,PeFl,RFS,RnSn,SRBoa,SwHk,SwPT,TPkMo,WePkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	RLF	None	No
D	16.7	16.8	1	51.7	51.8	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No	L	Maximum	H	RLF	None	No
D	16.8	16.9	1	51.8	51.9	BaEa,BHS,Bowl,CACO,CaLL,CHL,CRLF,LAPkMo,MOGS,MtKS,PeFl,RFS,RnSn,SRBoa,SwHk,SwPT,TPkMo,WePkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	RLF	None	No
D	16.9	17	1	51.9	52	BaEa,BHS,Bowl,CACO,CaLL,CHL,CRLF,LAPkMo,MOGS,MtKS,PeFl,RFS,RnSn,SRBoa,SwHk,SwPT,TPkMo,WePkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	RLF	None	No
D	17	17.1	1	52	52.1	BaEa,BHS,Bowl,CACO,CaLL,CHL,CRLF,LAPkMo,MOGS,MtKS,PeFl,RFS,RnSn,SRBoa,SwHk,SwPT,TPkMo,WePkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	RLF	None	No
D	17.1	17.2	1	52.1	52.2	BaEa,BHS,Bowl,CACO,CaLL,CHL,CRLF,LAPkMo,MOGS,MtKS,PeFl,RFS,RnSn,SRBoa,SwHk,SwPT,TPkMo,WePkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	RLF	None	No
D	17.2	17.3	1	52.2	52.3	BaEa,BHS,Bowl,CACO,CaLL,CHL,CRLF,LAPkMo,MOGS,MtKS,PeFl,RFS,RnSn,SRBoa,SwHk,SwPT,TPkMo,WePkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	RLF	None	No
D	17.3	17.4	1	52.3	52.4	BaEa,BHS,Bowl,CACO,CaLL,CHL,CRLF,LAPkMo,MOGS,MtKS,PeFl,RFS,RnSn,SRBoa,SwHk,SwPT,TPkMo,WePkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	RLF	None	No
D	17.4	17.5	1	52.4	52.5	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	RLF	None	No
D	17.5	17.6	1	52.5	52.6	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	RLF	None	No
D	17.6	17.7	1	52.6	52.7	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	17.7	17.8	1	52.7	52.8	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	RLF	None	No
D	17.8	17.9	1	52.8	52.9	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	RLF	None	No
D	17.9	18	1	52.9	53	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	RLF	None	No
D	18	18.1	1	53	53.1	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	RLF	None	No
D	18.1	18.2	1	53.1	53.2	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	18.2	18.3	1	53.2	53.3	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	18.3	18.4	1	53.3	53.4	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	18.4	18.5	1	53.4	53.5	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	18.5	18.6	1	53.5	53.6	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	18.6	18.7	1	53.6	53.7	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	18.7	18.8	1	53.7	53.8	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	18.8	18.9	1	53.8	53.9	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	18.9	19	1	53.9	54	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	19	19.1	1	54	54.1	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	19.1	19.2	1	54.1	54.2	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	19.2	19.3	1	54.2	54.3	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	19.3	19.4	1	54.3	54.4	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	19.4	19.5	1	54.4	54.5	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	19.5	19.6	1	54.5	54.6	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	19.6	19.7	1	54.6	54.7	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
D	19.7	19.8	1	54.7	54.8	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	19.8	19.9	1	54.8	54.9	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	19.9	20	1	54.9	55	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	20	20.1	1	55	55.1	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	20.1	20.2	1	55.1	55.2	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	20.2	20.3	1	55.2	55.3	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	20.3	20.4	1	55.3	55.4	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	20.4	20.5	1	55.4	55.5	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	20.5	20.6	1	55.5	55.6	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	20.6	20.7	1	55.6	55.7	BaEa,BHS,Bowl,CACO,CaLL,CHL,CRBoa,CRLF,LAPkMo,LBV,MOGS,MtKS,PBat,PeFl,RFS,RnSn,SOWL,SRBoa,SwHk,SwPT,TPkMo,WePkMo,WRBat,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	20.7	20.8	1	55.7	55.8	BaEa,CACO,CaLL,CHL,CRBoa,LBV,MtKS,PBat,PeFl,SOWL,SRBoa,TPkMo,WePkMo,WRBat,WYbC,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	20.8	20.9	1	55.8	55.9	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Maximum	H	None	None	No
D	20.9	21	1	55.9	56	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Maximum	H	None	None	No
D	21	21.1	1	56	56.1	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Maximum	H	None	None	No
D	21.1	21.2	1	56.1	56.2	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Maximum	H	None	None	No
D	21.2	21.3	1	56.2	56.3	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Maximum	H	None	None	No
D	21.3	21.4	1	56.3	56.4	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Maximum	H	None	None	No
D	21.4	21.5	1	56.4	56.5	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Maximum	H	None	None	No
D	21.5	21.6	1	56.5	56.6	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Maximum	H	None	None	No
D	21.6	21.7	1	56.6	56.7	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Maximum	H	None	None	No
D	21.7	21.8	1	56.7	56.8	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Maximum	H	None	None	No
D	21.8	21.9	1	56.8	56.9	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	L	Maximum	H	None	None	No
D	21.9	22	1	56.9	57	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	M	Maximum	H	None	None	No
D	22	22.1	1	57	57.1	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	M	Maximum	H	None	None	No
D	22.1	22.2	1	57.1	57.2	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	M	Maximum	H	None	None	No
D	22.2	22.3	1	57.2	57.3	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	M	Maximum	H	None	None	No
D	22.3	22.4	1	57.3	57.4	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	M	Maximum	H	None	None	No
D	22.4	22.5	1	57.4	57.5	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	M	Maximum	H	None	None	No
D	22.5	22.6	1	57.5	57.6	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	M	Moderate	M	None	None	No
D	22.6	22.7	1	57.6	57.7	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	M	Moderate	M	None	None	No
D	22.7	22.8	1	57.7	57.8	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	Yes	No	M	Moderate	M	None	None	No
D	22.8	22.9	1	57.8	57.9	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No	M	Moderate	M	None	None	No
D	22.9	23	1	57.9	58	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No	M	Moderate	M	None	None	No
D	23	23.1	1	58	58.1	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	NA	No	No	M	Moderate	M	None	None	No
D	23.1	23.2	1	58.1	58.2	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Maximum	H	None	None	No
D	23.2	23.3	1	58.2	58.3	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Maximum	H	None	None	No
D	23.3	23.4	1	58.3	58.4	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	SJBT	None	No
D	23.4	23.5	1	58.4	58.5	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
D	23.5	23.6	1	58.5	58.6	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	SJBT	None	No
D	23.6	23.7	1	58.6	58.7	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	None	No
D	23.7	23.8	1	58.7	58.8	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	No	No	No	M	Moderate	H	None	None	No
D	23.8	23.9	1	58.8	58.9	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	SJBT	CNBE	No
D	23.9	24	1	58.9	59	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	None	CNBE, SATR12	No
D	24	24.1	1	59	59.1	BaEa,CACO,CaLL,MtKS,PeFl,SRBoa,TPkMo,WePkMo,	Unknown	Yes	No	No	M	Maximum	H	SML	TARA	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
D	10.1	10.2	1	45.1	45.2	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
D	10.2	10.3	1	45.2	45.3	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
D	10.3	10.4	1	45.3	45.4	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
D	10.4	10.5	1	45.4	45.5	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
D	10.5	10.6	1	45.5	45.6	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
D	10.6	10.7	1	45.6	45.7	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
D	10.7	10.8	1	45.7	45.8	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
D	10.8	10.9	1	45.8	45.9	BHS,Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
D	10.9	11	1	45.9	46	BHS,Bowl,CACO,CHL,CRBoa,CRLF,DETO,LAPkMo,MOGS,PBat,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Maximum	H	None	None	Yes
D	11	11.1	1	46	46.1	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
D	11.1	11.2	1	46.1	46.2	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
D	11.2	11.3	1	46.2	46.3	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
D	11.3	11.4	1	46.3	46.4	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
D	11.4	11.5	1	46.4	46.5	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
D	11.5	11.6	1	46.5	46.6	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	M	Moderate	M	None	None	No
D	11.6	11.7	1	46.6	46.7	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
D	11.7	11.8	1	46.7	46.8	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
D	11.8	11.9	1	46.8	46.9	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
D	11.9	12	1	46.9	47	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
D	12	12.1	1	47	47.1	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
D	12.1	12.2	1	47.1	47.2	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
D	12.2	12.3	1	47.2	47.3	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
D	12.3	12.4	1	47.3	47.4	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
D	12.4	12.5	1	47.4	47.5	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
D	12.5	12.6	1	47.5	47.6	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
D	12.6	12.7	1	47.6	47.7	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
D	12.7	12.8	1	47.7	47.8	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
D	12.8	12.9	1	47.8	47.9	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
D	12.9	13	1	47.9	48	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
D	13	13.1	1	48	48.1	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
D	13.1	13.2	1	48.1	48.2	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
D	13.2	13.3	1	48.2	48.3	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
D	13.3	13.4	1	48.3	48.4	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	M	Moderate	M	None	None	No
D	13.4	13.5	1	48.4	48.5	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Moderate	M	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
D	13.5	13.6	1	48.5	48.6	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Moderate	M	None	None	No
D	13.6	13.7	1	48.6	48.7	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Maximum	H	None	None	No
D	13.7	13.8	1	48.7	48.8	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Moderate	M	None	None	No
D	13.8	13.9	1	48.8	48.9	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Moderate	M	None	None	No
D	13.9	14	1	48.9	49	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Moderate	M	None	None	No
D	14	14.1	1	49	49.1	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Moderate	M	None	None	No
D	14.1	14.2	1	49.1	49.2	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Moderate	M	None	None	No
D	14.2	14.3	1	49.2	49.3	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Moderate	M	None	None	No
D	14.3	14.4	1	49.3	49.4	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Moderate	M	None	None	No
D	14.4	14.5	1	49.4	49.5	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Moderate	M	None	None	No
D	14.5	14.6	1	49.5	49.6	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Moderate	M	None	None	No
D	14.6	14.7	1	49.6	49.7	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WRBat,	Unknown	NA	No	No	M	Moderate	M	None	None	No
D	14.7	14.8	1	49.7	49.8	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WRBat,	Unknown	NA	No	No	M	Maximum	H	None	None	No
D	14.8	14.9	1	49.8	49.9	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WRBat,	Unknown	NA	No	No	M	Maximum	H	None	None	No
D	14.9	15	1	49.9	50	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WRBat,	Unknown	NA	No	No	M	Maximum	H	None	None	No
D	15	15.1	1	50	50.1	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WRBat,	Unknown	NA	No	No	M	Maximum	H	None	None	No
D	15.1	15.2	1	50.1	50.2	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WRBat,	Unknown	NA	No	No	M	Maximum	H	None	None	No
D	15.2	15.3	1	50.2	50.3	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WRBat,	Unknown	NA	No	No	M	Maximum	H	None	None	No
D	15.3	15.4	1	50.3	50.4	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WRBat,	Unknown	NA	No	No	M	Maximum	H	None	None	No
D	15.4	15.5	1	50.4	50.5	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WRBat,	Unknown	NA	No	No	M	Maximum	H	None	None	No
D	15.5	15.6	1	50.5	50.6	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WRBat,	Unknown	NA	No	No	M	Maximum	H	None	None	No
D	15.6	15.7	1	50.6	50.7	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WRBat,	Unknown	NA	No	No	M	Maximum	H	None	None	No
D	15.7	15.8	1	50.7	50.8	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Maximum	H	None	None	No
D	15.8	15.9	1	50.8	50.9	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Maximum	H	None	None	No
D	15.9	16	1	50.9	51	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Maximum	H	None	None	No
D	16	16.1	1	51	51.1	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	M	Maximum	H	None	None	No
D	16.1	16.2	1	51.1	51.2	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	16.2	16.3	1	51.2	51.3	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	16.3	16.4	1	51.3	51.4	BaEa,BHS,Bowl,CACO,CaLL,CHL,CRLF,LAPkMo,MOGS,MtKS,PeFl,RFS,RnSn,SRBoa,SwHk,SwPT,TPkMo,WePkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	16.4	16.5	1	51.4	51.5	BaEa,BHS,Bowl,CACO,CaLL,CHL,CRLF,LAPkMo,MOGS,MtKS,PeFl,RFS,RnSn,SRBoa,SwHk,SwPT,TPkMo,WePkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No
D	16.5	16.6	1	51.5	51.6	BaEa,BHS,Bowl,CACO,CaLL,CHL,CRLF,LAPkMo,MOGS,MtKS,PeFl,RFS,RnSn,SRBoa,SwHk,SwPT,TPkMo,WePkMo,WRBat,	Unknown	NA	No	No	L	Maximum	H	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
D	2.2	2.3	1	37.2	37.3	BHS,Bowl,CACO,CaLL,CHL,CRBoa,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	2.3	2.4	1	37.3	37.4	BHS,Bowl,CACO,CaLL,CHL,CRBoa,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	2.4	2.5	1	37.4	37.5	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	2.5	2.6	1	37.5	37.6	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	2.6	2.7	1	37.6	37.7	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	2.7	2.8	1	37.7	37.8	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	2.8	2.9	1	37.8	37.9	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	2.9	3	1	37.9	38	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	3	3.1	1	38	38.1	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	3.1	3.2	1	38.1	38.2	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	3.2	3.3	1	38.2	38.3	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	3.3	3.4	1	38.3	38.4	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	3.4	3.5	1	38.4	38.5	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	3.5	3.6	1	38.5	38.6	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	3.6	3.7	1	38.6	38.7	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	3.7	3.8	1	38.7	38.8	BHS,Bowl,CACO,CaLL,CHL,CRBoa,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	3.8	3.9	1	38.8	38.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	3.9	4	1	38.9	39	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	4	4.1	1	39	39.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	4.1	4.2	1	39.1	39.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	4.2	4.3	1	39.2	39.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	4.3	4.4	1	39.3	39.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	4.4	4.5	1	39.4	39.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	4.5	4.6	1	39.5	39.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	4.6	4.7	1	39.6	39.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	4.7	4.8	1	39.7	39.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	4.8	4.9	1	39.8	39.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	4.9	5	1	39.9	40	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	5	5.1	1	40	40.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	5.1	5.2	1	40.1	40.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	5.2	5.3	1	40.2	40.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	5.3	5.4	1	40.3	40.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	5.4	5.5	1	40.4	40.5	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
D	5.5	5.6	1	40.5	40.6	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
D	5.6	5.7	1	40.6	40.7	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
D	5.7	5.8	1	40.7	40.8	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
D	5.8	5.9	1	40.8	40.9	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
D	5.9	6	1	40.9	41	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
D	6	6.1	1	41	41.1	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
D	6.1	6.2	1	41.1	41.2	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
D	6.2	6.3	1	41.2	41.3	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
D	6.3	6.4	1	41.3	41.4	BHS,Bowl,CACO,CHL,CRBoa,CRLF,DETO,LAPkMo,MOGS,PBat,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
D	6.4	6.5	1	41.4	41.5	BHS,Bowl,CACO,CHL,CRBoa,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	6.5	6.6	1	41.5	41.6	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	6.6	6.7	1	41.6	41.7	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	6.7	6.8	1	41.7	41.8	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	6.8	6.9	1	41.8	41.9	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	6.9	7	1	41.9	42	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	7	7.1	1	42	42.1	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	7.1	7.2	1	42.1	42.2	BHS,Bowl,CACO,CHL,CRBoa,CRLF,DETO,LAPkMo,MOGS,PBat,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
D	7.2	7.3	1	42.2	42.3	Bowl,CACO,CHL,CRBoa,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	7.3	7.4	1	42.3	42.4	Bowl,CACO,CHL,CRBoa,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	7.4	7.5	1	42.4	42.5	Bowl,CACO,CHL,CRBoa,PeFl,	DETO	NA	No	No	L	Maximum	H	None	None	No
D	7.5	7.6	1	42.5	42.6	Bowl,CACO,CHL,CRBoa,PeFl,	DETO	NA	No	No	L	Maximum	H	None	None	No
D	7.6	7.7	1	42.6	42.7	Bowl,CACO,CHL,CRBoa,PeFl,	DETO	NA	No	No	L	Maximum	H	None	None	No
D	7.7	7.8	1	42.7	42.8	Bowl,CACO,CHL,CRBoa,PeFl,	DETO	NA	No	No	L	Maximum	H	None	None	No
D	7.8	7.9	1	42.8	42.9	Bowl,CACO,CHL,CRBoa,PeFl,	DETO	NA	No	No	L	Maximum	H	None	None	No
D	7.9	8	1	42.9	43	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	No
D	8	8.1	1	43	43.1	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
D	8.1	8.2	1	43.1	43.2	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
D	8.2	8.3	1	43.2	43.3	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
D	8.3	8.4	1	43.3	43.4	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
D	8.4	8.5	1	43.4	43.5	BHS,Bowl,CACO,CHL,CRBoa,CRLF,DETO,LAPkMo,MOGS,PBat,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
D	8.5	8.6	1	43.5	43.6	BHS,Bowl,CACO,CHL,CRBoa,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
D	8.6	8.7	1	43.6	43.7	BHS,Bowl,CACO,CHL,CRBoa,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
D	8.7	8.8	1	43.7	43.8	BHS,Bowl,CACO,CHL,CRBoa,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
D	8.8	8.9	1	43.8	43.9	BHS,Bowl,CACO,CHL,CRBoa,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
D	8.9	9	1	43.9	44	BHS,Bowl,CACO,CHL,CRBoa,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
D	9	9.1	1	44	44.1	BHS,Bowl,CACO,CHL,CRBoa,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
D	9.1	9.2	1	44.1	44.2	BHS,Bowl,CACO,CHL,CRBoa,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
D	9.2	9.3	1	44.2	44.3	BHS,Bowl,CACO,CHL,CRBoa,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
D	9.3	9.4	1	44.3	44.4	BHS,Bowl,CACO,CHL,CRBoa,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
D	9.4	9.5	1	44.4	44.5	BHS,Bowl,CACO,CHL,CRBoa,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	No
D	9.5	9.6	1	44.5	44.6	Bowl,CACO,CHL,CRBoa,PeFl,	DETO	NA	No	No	L	Maximum	H	None	None	No
D	9.6	9.7	1	44.6	44.7	Bowl,CACO,CHL,CRBoa,PeFl,	DETO	NA	No	No	L	Maximum	H	None	None	No
D	9.7	9.8	1	44.7	44.8	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
D	9.8	9.9	1	44.8	44.9	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
D	9.9	10	1	44.9	45	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
D	10	10.1	1	45	45.1	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
C	13.7	13.8	1	27	27.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	13.8	13.9	1	27.1	27.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	13.9	14	1	27.2	27.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	14	14.1	1	27.3	27.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	14.1	14.2	1	27.4	27.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	14.2	14.3	1	27.5	27.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	14.3	14.4	1	27.6	27.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	14.4	14.5	1	27.7	27.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	14.5	14.6	1	27.8	27.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	14.6	14.7	1	27.9	28	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	14.7	14.8	1	28	28.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	14.8	14.9	1	28.1	28.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	14.9	15	1	28.2	28.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	15	15.1	1	28.3	28.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	15.1	15.2	1	28.4	28.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	15.2	15.3	1	28.5	28.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	15.3	15.4	1	28.6	28.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	15.4	15.5	1	28.7	28.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	15.5	15.6	1	28.8	28.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	15.6	15.7	1	28.9	29	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	15.7	15.8	1	29	29.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	15.8	15.9	1	29.1	29.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	15.9	16	1	29.2	29.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	16	16.1	1	29.3	29.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	16.1	16.2	1	29.4	29.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	16.2	16.3	1	29.5	29.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	16.3	16.4	1	29.6	29.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	16.4	16.5	1	29.7	29.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	16.5	16.6	1	29.8	29.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	16.6	16.7	1	29.9	30	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	16.7	16.8	1	30	30.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	16.8	16.9	1	30.1	30.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	16.9	17	1	30.2	30.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	17	17.1	1	30.3	30.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	17.1	17.2	1	30.4	30.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	17.2	17.3	1	30.5	30.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	17.3	17.4	1	30.6	30.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	17.4	17.5	1	30.7	30.8	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	17.5	17.6	1	30.8	30.9	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	17.6	17.7	1	30.9	31	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	17.7	17.8	1	31	31.1	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	17.8	17.9	1	31.1	31.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	17.9	18	1	31.2	31.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	18	18.1	1	31.3	31.4	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	18.1	18.2	1	31.4	31.5	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	18.2	18.3	1	31.5	31.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	18.3	18.4	1	31.6	31.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	18.4	18.5	1	31.7	31.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	18.5	18.6	1	31.8	31.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	18.6	18.7	1	31.9	32	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	18.7	18.8	1	32	32.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
C	18.8	18.9	1	32.1	32.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	18.9	19	1	32.2	32.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	19	19.1	1	32.3	32.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	19.1	19.2	1	32.4	32.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	19.2	19.3	1	32.5	32.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	19.3	19.4	1	32.6	32.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	19.4	19.5	1	32.7	32.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	19.5	19.6	1	32.8	32.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	19.6	19.7	1	32.9	33	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	19.7	19.8	1	33	33.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	19.8	19.9	1	33.1	33.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	19.9	20	1	33.2	33.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	20	20.1	1	33.3	33.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	20.1	20.2	1	33.4	33.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	20.2	20.3	1	33.5	33.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	20.3	20.4	1	33.6	33.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	20.4	20.5	1	33.7	33.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	20.5	20.6	1	33.8	33.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	20.6	20.7	1	33.9	34	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	20.7	20.8	1	34	34.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	20.8	20.9	1	34.1	34.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	20.9	21	1	34.2	34.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	21	21.1	1	34.3	34.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	21.1	21.2	1	34.4	34.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	21.2	21.3	1	34.5	34.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	21.3	21.4	1	34.6	34.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	21.4	21.5	1	34.7	34.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	21.5	21.6	1	34.8	34.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	21.6	21.7	1	34.9	35	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	0	0.1	1	35	35.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	0.1	0.2	1	35.1	35.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	0.2	0.3	1	35.2	35.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	0.3	0.4	1	35.3	35.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	0.4	0.5	1	35.4	35.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	0.5	0.6	1	35.5	35.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	0.6	0.7	1	35.6	35.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	0.7	0.8	1	35.7	35.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	0.8	0.9	1	35.8	35.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	0.9	1	1	35.9	36	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	1	1.1	1	36	36.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	1.1	1.2	1	36.1	36.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	1.2	1.3	1	36.2	36.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	1.3	1.4	1	36.3	36.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	1.4	1.5	1	36.4	36.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	1.5	1.6	1	36.5	36.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	1.6	1.7	1	36.6	36.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	1.7	1.8	1	36.7	36.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	1.8	1.9	1	36.8	36.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	1.9	2	1	36.9	37	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	2	2.1	1	37	37.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
D	2.1	2.2	1	37.1	37.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
C	3.5	3.6	1	16.8	16.9	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	3.6	3.7	1	16.9	17	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	3.7	3.8	1	17	17.1	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	3.8	3.9	1	17.1	17.2	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	3.9	4	1	17.2	17.3	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	4	4.1	1	17.3	17.4	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	4.1	4.2	1	17.4	17.5	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	4.2	4.3	1	17.5	17.6	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	4.3	4.4	1	17.6	17.7	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	4.4	4.5	1	17.7	17.8	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	4.5	4.6	1	17.8	17.9	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	4.6	4.7	1	17.9	18	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	4.7	4.8	1	18	18.1	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	4.8	4.9	1	18.1	18.2	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	4.9	5	1	18.2	18.3	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	5	5.1	1	18.3	18.4	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	5.1	5.2	1	18.4	18.5	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	5.2	5.3	1	18.5	18.6	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	5.3	5.4	1	18.6	18.7	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	5.4	5.5	1	18.7	18.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	5.5	5.6	1	18.8	18.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	5.6	5.7	1	18.9	19	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	5.7	5.8	1	19	19.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	5.8	5.9	1	19.1	19.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	5.9	6	1	19.2	19.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	6	6.1	1	19.3	19.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	6.1	6.2	1	19.4	19.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	6.2	6.3	1	19.5	19.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	6.3	6.4	1	19.6	19.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	6.4	6.5	1	19.7	19.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	6.5	6.6	1	19.8	19.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	6.6	6.7	1	19.9	20	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	6.7	6.8	1	20	20.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	6.8	6.9	1	20.1	20.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	6.9	7	1	20.2	20.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	7	7.1	1	20.3	20.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	7.1	7.2	1	20.4	20.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	7.2	7.3	1	20.5	20.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	7.3	7.4	1	20.6	20.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	7.4	7.5	1	20.7	20.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	7.5	7.6	1	20.8	20.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	7.6	7.7	1	20.9	21	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	7.7	7.8	1	21	21.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	7.8	7.9	1	21.1	21.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	7.9	8	1	21.2	21.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	8	8.1	1	21.3	21.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	8.1	8.2	1	21.4	21.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	8.2	8.3	1	21.5	21.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	8.3	8.4	1	21.6	21.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	8.4	8.5	1	21.7	21.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	8.5	8.6	1	21.8	21.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
C	8.6	8.7	1	21.9	22	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	8.7	8.8	1	22	22.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	8.8	8.9	1	22.1	22.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	8.9	9	1	22.2	22.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	9	9.1	1	22.3	22.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	9.1	9.2	1	22.4	22.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	9.2	9.3	1	22.5	22.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	9.3	9.4	1	22.6	22.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	9.4	9.5	1	22.7	22.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	9.5	9.6	1	22.8	22.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	9.6	9.7	1	22.9	23	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	9.7	9.8	1	23	23.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	9.8	9.9	1	23.1	23.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	9.9	10	1	23.2	23.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	10	10.1	1	23.3	23.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	10.1	10.2	1	23.4	23.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	10.2	10.3	1	23.5	23.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	10.3	10.4	1	23.6	23.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	10.4	10.5	1	23.7	23.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	10.5	10.6	1	23.8	23.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	10.6	10.7	1	23.9	24	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	10.7	10.8	1	24	24.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	10.8	10.9	1	24.1	24.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	10.9	11	1	24.2	24.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	11	11.1	1	24.3	24.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	11.1	11.2	1	24.4	24.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	11.2	11.3	1	24.5	24.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	11.3	11.4	1	24.6	24.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	11.4	11.5	1	24.7	24.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	11.5	11.6	1	24.8	24.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	11.6	11.7	1	24.9	25	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	11.7	11.8	1	25	25.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	11.8	11.9	1	25.1	25.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	11.9	12	1	25.2	25.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	12	12.1	1	25.3	25.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	12.1	12.2	1	25.4	25.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	12.2	12.3	1	25.5	25.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	12.3	12.4	1	25.6	25.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	12.4	12.5	1	25.7	25.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	12.5	12.6	1	25.8	25.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	12.6	12.7	1	25.9	26	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	12.7	12.8	1	26	26.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	12.8	12.9	1	26.1	26.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	12.9	13	1	26.2	26.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	13	13.1	1	26.3	26.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	13.1	13.2	1	26.4	26.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	13.2	13.3	1	26.5	26.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	13.3	13.4	1	26.6	26.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	13.4	13.5	1	26.7	26.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	13.5	13.6	1	26.8	26.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	13.6	13.7	1	26.9	27	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
B	21	21.1	2, 2A, 3	34.3	34.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	21.1	21.2	2, 2A, 3	34.4	34.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	21.2	21.3	2, 2A, 3	34.5	34.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	21.3	21.4	2, 2A, 3	34.6	34.7	BHS,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	21.4	21.5	2, 2A, 3	34.7	34.8	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	21.5	21.6	2, 2A, 3	34.8	34.9	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	21.6	21.7	2, 2A, 3	34.9	35	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	21.7	21.8	2, 2A, 3	35	35.1	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	21.8	21.9	2, 2A, 3	35.1	35.2	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	21.9	22	2, 2A, 3	35.2	35.3	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	22	22.1	2, 2A, 3	35.3	35.4	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	22.1	22.2	2, 2A, 3	35.4	35.5	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	22.2	22.3	2, 2A, 3	35.5	35.6	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	22.3	22.4	2, 2A, 3	35.6	35.7	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	22.4	22.5	2, 2A, 3	35.7	35.8	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	22.5	22.6	2, 2A, 3	35.8	35.9	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	22.6	22.7	2, 2A, 3	35.9	36	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	22.7	22.8	2, 2A, 3	36	36.1	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	22.8	22.9	2, 2A, 3	36.1	36.2	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	22.9	23	2, 2A, 3	36.2	36.3	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	23	23.1	2, 2A, 3	36.3	36.4	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	23.1	23.2	2, 2A, 3	36.4	36.5	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	23.2	23.3	2, 2A, 3	36.5	36.6	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	23.3	23.4	2, 2A, 3	36.6	36.7	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	23.4	23.5	2, 2A, 3	36.7	36.8	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	23.5	23.6	2, 2A, 3	36.8	36.9	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	23.6	23.7	2, 2A, 3	36.9	37	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	23.7	23.8	2, 2A, 3	37	37.1	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	23.8	23.9	2, 2A, 3	37.1	37.2	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	23.9	24	2, 2A, 3	37.2	37.3	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	24	24.1	2, 2A, 3	37.3	37.4	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	24.1	24.2	2, 2A, 3	37.4	37.5	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	24.2	24.3	2, 2A, 3	37.5	37.6	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	24.3	24.4	2, 2A, 3	37.6	37.7	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	24.4	24.5	2, 2A, 3	37.7	37.8	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	24.5	24.6	2, 2A, 3	37.8	37.9	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	24.6	24.7	2, 2A, 3	37.9	38	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	24.7	24.8	2, 2A, 3	38	38.1	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	24.8	24.9	2, 2A, 3	38.1	38.2	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	24.9	25	2, 2A, 3	38.2	38.3	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	25	25.1	2, 2A, 3	38.3	38.4	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
B	25.1	25.2	2, 2A, 3	38.4	38.5	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	25.2	25.3	2, 2A, 3	38.5	38.6	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	25.3	25.4	2, 2A, 3	38.6	38.7	BHS,Bowl,CACO,CHL,CRLF,LAPkMo,MOGS,PeFI,RFS,RnSn,SwHk,SwPT,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	25.4	25.5	2, 2A, 3	38.7	38.8	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	25.5	25.6	2, 2A, 3	38.8	38.9	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	25.6	25.7	2, 2A, 3	38.9	39	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	25.7	25.8	2, 2A, 3	39	39.1	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	25.8	25.9	2, 2A, 3	39.1	39.2	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	25.9	26	2, 2A, 3	39.2	39.3	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	26	26.1	2, 2A, 3	39.3	39.4	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	26.1	26.2	2, 2A, 3	39.4	39.5	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	26.2	26.3	2, 2A, 3	39.5	39.6	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	26.3	26.4	2, 2A, 3	39.6	39.7	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	26.4	26.5	2, 2A, 3	39.7	39.8	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	0	0.1	1	13.3	13.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	0.1	0.2	1	13.4	13.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	0.2	0.3	1	13.5	13.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
C	0.3	0.4	1	13.6	13.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	0.4	0.5	1	13.7	13.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	0.5	0.6	1	13.8	13.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	0.6	0.7	1	13.9	14	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	0.7	0.8	1	14	14.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	0.8	0.9	1	14.1	14.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	0.9	1	1	14.2	14.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	1	1.1	1	14.3	14.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	1.1	1.2	1	14.4	14.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	1.2	1.3	1	14.5	14.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	1.3	1.4	1	14.6	14.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	1.4	1.5	1	14.7	14.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	Yes
C	1.5	1.6	1	14.8	14.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	1.6	1.7	1	14.9	15	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	Yes
C	1.7	1.8	1	15	15.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	1.8	1.9	1	15.1	15.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	1.9	2	1	15.2	15.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
C	2	2.1	1	15.3	15.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	2.1	2.2	1	15.4	15.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	Yes
C	2.2	2.3	1	15.5	15.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	2.3	2.4	1	15.6	15.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	2.4	2.5	1	15.7	15.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	2.5	2.6	1	15.8	15.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	2.6	2.7	1	15.9	16	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	2.7	2.8	1	16	16.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	2.8	2.9	1	16.1	16.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	2.9	3	1	16.2	16.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	H	None	None	No
C	3	3.1	1	16.3	16.4	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFI,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	3.1	3.2	1	16.4	16.5	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFI,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	3.2	3.3	1	16.5	16.6	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFI,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	3.3	3.4	1	16.6	16.7	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFI,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
C	3.4	3.5	1	16.7	16.8	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFI,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
B	11.7	11.8	2, 2A, 3	25	25.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	11.8	11.9	2, 2A, 3	25.1	25.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	11.9	12	2, 2A, 3	25.2	25.3	BHS,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	12	12.1	2, 2A, 3	25.3	25.4	BHS,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	12.1	12.2	2, 2A, 3	25.4	25.5	BHS,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	12.2	12.3	2, 2A, 3	25.5	25.6	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	12.3	12.4	2, 2A, 3	25.6	25.7	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	12.4	12.5	2, 2A, 3	25.7	25.8	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	12.5	12.6	2, 2A, 3	25.8	25.9	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	12.6	12.7	2, 2A, 3	25.9	26	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	12.7	12.8	2, 2A, 3	26	26.1	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	12.8	12.9	2, 2A, 3	26.1	26.2	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	12.9	13	2, 2A, 3	26.2	26.3	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	13	13.1	2, 2A, 3	26.3	26.4	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	13.1	13.2	2, 2A, 3	26.4	26.5	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	13.2	13.3	2, 2A, 3	26.5	26.6	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	13.3	13.4	2, 2A, 3	26.6	26.7	BHS,Bowl,CACO,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	13.4	13.5	2, 2A, 3	26.7	26.8	BHS,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	13.5	13.6	2, 2A, 3	26.8	26.9	BHS,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	13.6	13.7	2, 2A, 3	26.9	27	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	13.7	13.8	2, 2A, 3	27	27.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	13.8	13.9	2, 2A, 3	27.1	27.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	13.9	14	2, 2A, 3	27.2	27.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	14	14.1	2, 2A, 3	27.3	27.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	14.1	14.2	2, 2A, 3	27.4	27.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	14.2	14.3	2, 2A, 3	27.5	27.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	14.3	14.4	2, 2A, 3	27.6	27.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	14.4	14.5	2, 2A, 3	27.7	27.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	14.5	14.6	2, 2A, 3	27.8	27.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	14.6	14.7	2, 2A, 3	27.9	28	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Maximum	H	None	None	No
B	14.7	14.8	2, 2A, 3	28	28.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Maximum	H	None	None	No
B	14.8	14.9	2, 2A, 3	28.1	28.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Maximum	H	None	None	No
B	14.9	15	2, 2A, 3	28.2	28.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Maximum	H	None	None	No
B	15	15.1	2, 2A, 3	28.3	28.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Maximum	H	None	None	No
B	15.1	15.2	2, 2A, 3	28.4	28.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Maximum	H	None	None	No
B	15.2	15.3	2, 2A, 3	28.5	28.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Maximum	H	None	None	No
B	15.3	15.4	2, 2A, 3	28.6	28.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Maximum	H	None	None	No
B	15.4	15.5	2, 2A, 3	28.7	28.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Maximum	H	None	None	No
B	15.5	15.6	2, 2A, 3	28.8	28.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Maximum	H	None	None	No
B	15.6	15.7	2, 2A, 3	28.9	29	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Maximum	H	None	None	No
B	15.7	15.8	2, 2A, 3	29	29.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Maximum	H	None	None	No
B	15.8	15.9	2, 2A, 3	29.1	29.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Maximum	H	None	None	No
B	15.9	16	2, 2A, 3	29.2	29.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Maximum	H	None	None	No
B	16	16.1	2, 2A, 3	29.3	29.4	BHS,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Maximum	H	None	None	No
B	16.1	16.2	2, 2A, 3	29.4	29.5	BHS,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Maximum	H	None	None	No
B	16.2	16.3	2, 2A, 3	29.5	29.6	BHS,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Maximum	H	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
B	16.3	16.4	2, 2A, 3	29.6	29.7	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Maximum	H	None	None	No
B	16.4	16.5	2, 2A, 3	29.7	29.8	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Maximum	H	None	None	No
B	16.5	16.6	2, 2A, 3	29.8	29.9	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	16.6	16.7	2, 2A, 3	29.9	30	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	16.7	16.8	2, 2A, 3	30	30.1	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	16.8	16.9	2, 2A, 3	30.1	30.2	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	16.9	17	2, 2A, 3	30.2	30.3	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	17	17.1	2, 2A, 3	30.3	30.4	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	17.1	17.2	2, 2A, 3	30.4	30.5	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	17.2	17.3	2, 2A, 3	30.5	30.6	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	17.3	17.4	2, 2A, 3	30.6	30.7	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	17.4	17.5	2, 2A, 3	30.7	30.8	BHS,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	17.5	17.6	2, 2A, 3	30.8	30.9	BHS,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	17.6	17.7	2, 2A, 3	30.9	31	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	17.7	17.8	2, 2A, 3	31	31.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	17.8	17.9	2, 2A, 3	31.1	31.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	17.9	18	2, 2A, 3	31.2	31.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	18	18.1	2, 2A, 3	31.3	31.4	BHS,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	18.1	18.2	2, 2A, 3	31.4	31.5	BHS,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	18.2	18.3	2, 2A, 3	31.5	31.6	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	18.3	18.4	2, 2A, 3	31.6	31.7	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	18.4	18.5	2, 2A, 3	31.7	31.8	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	18.5	18.6	2, 2A, 3	31.8	31.9	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	18.6	18.7	2, 2A, 3	31.9	32	BHS,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	18.7	18.8	2, 2A, 3	32	32.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	18.8	18.9	2, 2A, 3	32.1	32.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	18.9	19	2, 2A, 3	32.2	32.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	19	19.1	2, 2A, 3	32.3	32.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	19.1	19.2	2, 2A, 3	32.4	32.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	19.2	19.3	2, 2A, 3	32.5	32.6	BHS,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	19.3	19.4	2, 2A, 3	32.6	32.7	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	19.4	19.5	2, 2A, 3	32.7	32.8	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	19.5	19.6	2, 2A, 3	32.8	32.9	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	19.6	19.7	2, 2A, 3	32.9	33	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	19.7	19.8	2, 2A, 3	33	33.1	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	19.8	19.9	2, 2A, 3	33.1	33.2	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	19.9	20	2, 2A, 3	33.2	33.3	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	20	20.1	2, 2A, 3	33.3	33.4	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	20.1	20.2	2, 2A, 3	33.4	33.5	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	20.2	20.3	2, 2A, 3	33.5	33.6	BHS,Bowl,CACO,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	20.3	20.4	2, 2A, 3	33.6	33.7	BHS,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,RFS,RnSn,SwHk,TBeBat,TPkMo,WIFL,WRBat,WYbC,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	20.4	20.5	2, 2A, 3	33.7	33.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	20.5	20.6	2, 2A, 3	33.8	33.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	20.6	20.7	2, 2A, 3	33.9	34	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	20.7	20.8	2, 2A, 3	34	34.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	20.8	20.9	2, 2A, 3	34.1	34.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	20.9	21	2, 2A, 3	34.2	34.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO	NA	No	No	L	Moderate	M	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
B	1.9	2	2, 2A, 3	15.2	15.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	2	2.1	2, 2A, 3	15.3	15.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	2.1	2.2	2, 2A, 3	15.4	15.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	2.2	2.3	2, 2A, 3	15.5	15.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	2.3	2.4	2, 2A, 3	15.6	15.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	2.4	2.5	2, 2A, 3	15.7	15.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	2.5	2.6	2, 2A, 3	15.8	15.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	2.6	2.7	2, 2A, 3	15.9	16	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	2.7	2.8	2, 2A, 3	16	16.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	2.8	2.9	2, 2A, 3	16.1	16.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	2.9	3	2, 2A, 3	16.2	16.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	3	3.1	2, 2A, 3	16.3	16.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	3.1	3.2	2, 2A, 3	16.4	16.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	3.2	3.3	2, 2A, 3	16.5	16.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	3.3	3.4	2, 2A, 3	16.6	16.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	3.4	3.5	2, 2A, 3	16.7	16.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	3.5	3.6	2, 2A, 3	16.8	16.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	3.6	3.7	2, 2A, 3	16.9	17	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	3.7	3.8	2, 2A, 3	17	17.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	3.8	3.9	2, 2A, 3	17.1	17.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	3.9	4	2, 2A, 3	17.2	17.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	4	4.1	2, 2A, 3	17.3	17.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	4.1	4.2	2, 2A, 3	17.4	17.5	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	4.2	4.3	2, 2A, 3	17.5	17.6	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	4.3	4.4	2, 2A, 3	17.6	17.7	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	4.4	4.5	2, 2A, 3	17.7	17.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	4.5	4.6	2, 2A, 3	17.8	17.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	4.6	4.7	2, 2A, 3	17.9	18	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	4.7	4.8	2, 2A, 3	18	18.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	4.8	4.9	2, 2A, 3	18.1	18.2	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	4.9	5	2, 2A, 3	18.2	18.3	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	5	5.1	2, 2A, 3	18.3	18.4	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	5.1	5.2	2, 2A, 3	18.4	18.5	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	5.2	5.3	2, 2A, 3	18.5	18.6	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	5.3	5.4	2, 2A, 3	18.6	18.7	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	5.4	5.5	2, 2A, 3	18.7	18.8	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	5.5	5.6	2, 2A, 3	18.8	18.9	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	5.6	5.7	2, 2A, 3	18.9	19	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	5.7	5.8	2, 2A, 3	19	19.1	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	5.8	5.9	2, 2A, 3	19.1	19.2	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	5.9	6	2, 2A, 3	19.2	19.3	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	6	6.1	2, 2A, 3	19.3	19.4	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	6.1	6.2	2, 2A, 3	19.4	19.5	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	6.2	6.3	2, 2A, 3	19.5	19.6	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	6.3	6.4	2, 2A, 3	19.6	19.7	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	6.4	6.5	2, 2A, 3	19.7	19.8	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	6.5	6.6	2, 2A, 3	19.8	19.9	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	6.6	6.7	2, 2A, 3	19.9	20	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	6.7	6.8	2, 2A, 3	20	20.1	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	6.8	6.9	2, 2A, 3	20.1	20.2	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	6.9	7	2, 2A, 3	20.2	20.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
B	7	7.1	2, 2A, 3	20.3	20.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	7.1	7.2	2, 2A, 3	20.4	20.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	7.2	7.3	2, 2A, 3	20.5	20.6	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	7.3	7.4	2, 2A, 3	20.6	20.7	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	7.4	7.5	2, 2A, 3	20.7	20.8	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	7.5	7.6	2, 2A, 3	20.8	20.9	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	7.6	7.7	2, 2A, 3	20.9	21	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	7.7	7.8	2, 2A, 3	21	21.1	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	7.8	7.9	2, 2A, 3	21.1	21.2	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	7.9	8	2, 2A, 3	21.2	21.3	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	8	8.1	2, 2A, 3	21.3	21.4	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	8.1	8.2	2, 2A, 3	21.4	21.5	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	8.2	8.3	2, 2A, 3	21.5	21.6	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	8.3	8.4	2, 2A, 3	21.6	21.7	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	8.4	8.5	2, 2A, 3	21.7	21.8	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	8.5	8.6	2, 2A, 3	21.8	21.9	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	8.6	8.7	2, 2A, 3	21.9	22	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	8.7	8.8	2, 2A, 3	22	22.1	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	8.8	8.9	2, 2A, 3	22.1	22.2	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	8.9	9	2, 2A, 3	22.2	22.3	BHS,Bowl,CACO,CHL,CRBoa,CRLF,DETO,LAPkMo,MOGS,PBat,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	9	9.1	2, 2A, 3	22.3	22.4	BHS,Bowl,CACO,CHL,CRBoa,CRLF,DETO,LAPkMo,MOGS,PBat,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	9.1	9.2	2, 2A, 3	22.4	22.5	BHS,Bowl,CACO,CHL,CRBoa,CRLF,DETO,LAPkMo,MOGS,PBat,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	9.2	9.3	2, 2A, 3	22.5	22.6	BHS,Bowl,CACO,CHL,CRBoa,CRLF,DETO,LAPkMo,MOGS,PBat,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	9.3	9.4	2, 2A, 3	22.6	22.7	BHS,Bowl,CACO,CHL,CRBoa,CRLF,DETO,LAPkMo,MOGS,PBat,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	9.4	9.5	2, 2A, 3	22.7	22.8	BHS,Bowl,CACO,CHL,CRBoa,CRLF,DETO,LAPkMo,MOGS,PBat,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	9.5	9.6	2, 2A, 3	22.8	22.9	BHS,Bowl,CACO,CHL,CRBoa,CRLF,DETO,LAPkMo,MOGS,PBat,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	9.6	9.7	2, 2A, 3	22.9	23	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	9.7	9.8	2, 2A, 3	23	23.1	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	9.8	9.9	2, 2A, 3	23.1	23.2	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	9.9	10	2, 2A, 3	23.2	23.3	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	10	10.1	2, 2A, 3	23.3	23.4	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TBeBat,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	10.1	10.2	2, 2A, 3	23.4	23.5	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TBeBat,TPkMo,WRBat,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
B	10.2	10.3	2, 2A, 3	23.5	23.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,TBeBat,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	10.3	10.4	2, 2A, 3	23.6	23.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	10.4	10.5	2, 2A, 3	23.7	23.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	10.5	10.6	2, 2A, 3	23.8	23.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	10.6	10.7	2, 2A, 3	23.9	24	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	10.7	10.8	2, 2A, 3	24	24.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	10.8	10.9	2, 2A, 3	24.1	24.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	10.9	11	2, 2A, 3	24.2	24.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	11	11.1	2, 2A, 3	24.3	24.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	11.1	11.2	2, 2A, 3	24.4	24.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	11.2	11.3	2, 2A, 3	24.5	24.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	11.3	11.4	2, 2A, 3	24.6	24.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	11.4	11.5	2, 2A, 3	24.7	24.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	11.5	11.6	2, 2A, 3	24.8	24.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	11.6	11.7	2, 2A, 3	24.9	25	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
A	5.1	5.2	1, 2, 2A, 3	5.1	5.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	5.2	5.3	1, 2, 2A, 3	5.2	5.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	5.3	5.4	1, 2, 2A, 3	5.3	5.4	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	5.4	5.5	1, 2, 2A, 3	5.4	5.5	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	5.5	5.6	1, 2, 2A, 3	5.5	5.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	5.6	5.7	1, 2, 2A, 3	5.6	5.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	5.7	5.8	1, 2, 2A, 3	5.7	5.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	5.8	5.9	1, 2, 2A, 3	5.8	5.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	5.9	6	1, 2, 2A, 3	5.9	6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	6	6.1	1, 2, 2A, 3	6	6.1	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFI,TPkMo,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	Yes
A	6.1	6.2	1, 2, 2A, 3	6.1	6.2	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFI,TPkMo,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	Yes
A	6.2	6.3	1, 2, 2A, 3	6.2	6.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	6.3	6.4	1, 2, 2A, 3	6.3	6.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	6.4	6.5	1, 2, 2A, 3	6.4	6.5	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	6.5	6.6	1, 2, 2A, 3	6.5	6.6	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	6.6	6.7	1, 2, 2A, 3	6.6	6.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	6.7	6.8	1, 2, 2A, 3	6.7	6.8	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	6.8	6.9	1, 2, 2A, 3	6.8	6.9	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	6.9	7	1, 2, 2A, 3	6.9	7	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	7	7.1	1, 2, 2A, 3	7	7.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	7.1	7.2	1, 2, 2A, 3	7.1	7.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	7.2	7.3	1, 2, 2A, 3	7.2	7.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	7.3	7.4	1, 2, 2A, 3	7.3	7.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	7.4	7.5	1, 2, 2A, 3	7.4	7.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	7.5	7.6	1, 2, 2A, 3	7.5	7.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	7.6	7.7	1, 2, 2A, 3	7.6	7.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	7.7	7.8	1, 2, 2A, 3	7.7	7.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	7.8	7.9	1, 2, 2A, 3	7.8	7.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	7.9	8	1, 2, 2A, 3	7.9	8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	8	8.1	1, 2, 2A, 3	8	8.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	8.1	8.2	1, 2, 2A, 3	8.1	8.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	8.2	8.3	1, 2, 2A, 3	8.2	8.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	8.3	8.4	1, 2, 2A, 3	8.3	8.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	8.4	8.5	1, 2, 2A, 3	8.4	8.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	8.5	8.6	1, 2, 2A, 3	8.5	8.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	8.6	8.7	1, 2, 2A, 3	8.6	8.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	8.7	8.8	1, 2, 2A, 3	8.7	8.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	8.8	8.9	1, 2, 2A, 3	8.8	8.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	8.9	9	1, 2, 2A, 3	8.9	9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	9	9.1	1, 2, 2A, 3	9	9.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	Yes
A	9.1	9.2	1, 2, 2A, 3	9.1	9.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	9.2	9.3	1, 2, 2A, 3	9.2	9.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	9.3	9.4	1, 2, 2A, 3	9.3	9.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	9.4	9.5	1, 2, 2A, 3	9.4	9.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	9.5	9.6	1, 2, 2A, 3	9.5	9.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	9.6	9.7	1, 2, 2A, 3	9.6	9.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	9.7	9.8	1, 2, 2A, 3	9.7	9.8	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFI,TPkMo,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	Yes
A	9.8	9.9	1, 2, 2A, 3	9.8	9.9	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFI,TPkMo,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	Yes
A	9.9	10	1, 2, 2A, 3	9.9	10	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFI,TPkMo,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	Yes
A	10	10.1	1, 2, 2A, 3	10	10.1	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFI,TPkMo,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	Yes
A	10.1	10.2	1, 2, 2A, 3	10.1	10.2	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFI,TPkMo,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	Yes

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
A	10.2	10.3	1, 2, 2A, 3	10.2	10.3	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	Yes
A	10.3	10.4	1, 2, 2A, 3	10.3	10.4	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	Yes
A	10.4	10.5	1, 2, 2A, 3	10.4	10.5	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	Yes
A	10.5	10.6	1, 2, 2A, 3	10.5	10.6	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	10.6	10.7	1, 2, 2A, 3	10.6	10.7	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	Yes
A	10.7	10.8	1, 2, 2A, 3	10.7	10.8	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	Yes
A	10.8	10.9	1, 2, 2A, 3	10.8	10.9	Bowl,CACO,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	Yes
A	10.9	11	1, 2, 2A, 3	10.9	11	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	Yes
A	11	11.1	1, 2, 2A, 3	11	11.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	11.1	11.2	1, 2, 2A, 3	11.1	11.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	11.2	11.3	1, 2, 2A, 3	11.2	11.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	11.3	11.4	1, 2, 2A, 3	11.3	11.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	11.4	11.5	1, 2, 2A, 3	11.4	11.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	11.5	11.6	1, 2, 2A, 3	11.5	11.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	11.6	11.7	1, 2, 2A, 3	11.6	11.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	11.7	11.8	1, 2, 2A, 3	11.7	11.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	11.8	11.9	1, 2, 2A, 3	11.8	11.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	11.9	12	1, 2, 2A, 3	11.9	12	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	12	12.1	1, 2, 2A, 3	12	12.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	12.1	12.2	1, 2, 2A, 3	12.1	12.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	12.2	12.3	1, 2, 2A, 3	12.2	12.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	12.3	12.4	1, 2, 2A, 3	12.3	12.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	12.4	12.5	1, 2, 2A, 3	12.4	12.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	Yes
A	12.5	12.6	1, 2, 2A, 3	12.5	12.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	12.6	12.7	1, 2, 2A, 3	12.6	12.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	Yes
A	12.7	12.8	1, 2, 2A, 3	12.7	12.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	12.8	12.9	1, 2, 2A, 3	12.8	12.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	12.9	13	1, 2, 2A, 3	12.9	13	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
A	13	13.1	1, 2, 2A, 3	13	13.1	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
A	13.1	13.2	1, 2, 2A, 3	13.1	13.2	Bowl,CACO,CaLL,CHL,CRBoa,DETO,MOGS,PBat,PeFl,TPkMo,	DETO	NA	No	No	L	Maximum	H	None	None	Yes
A	13.2	13.2	1, 2, 2A, 3	13.2	13.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	0	0.1	2, 2A, 3	13.3	13.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	0.1	0.2	2, 2A, 3	13.4	13.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	0.2	0.3	2, 2A, 3	13.5	13.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	0.3	0.4	2, 2A, 3	13.6	13.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	0.4	0.5	2, 2A, 3	13.7	13.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	0.5	0.6	2, 2A, 3	13.8	13.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	0.6	0.7	2, 2A, 3	13.9	14	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	0.7	0.8	2, 2A, 3	14	14.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	0.8	0.9	2, 2A, 3	14.1	14.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	0.9	1	2, 2A, 3	14.2	14.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	1	1.1	2, 2A, 3	14.3	14.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	1.1	1.2	2, 2A, 3	14.4	14.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	1.2	1.3	2, 2A, 3	14.5	14.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	1.3	1.4	2, 2A, 3	14.6	14.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	1.4	1.5	2, 2A, 3	14.7	14.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	1.5	1.6	2, 2A, 3	14.8	14.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	No
B	1.6	1.7	2, 2A, 3	14.9	15	BHS,Bowl,CACO,CaLL,CHL,CRBoa,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	1.7	1.8	2, 2A, 3	15	15.1	BHS,Bowl,CACO,CaLL,CHL,CRBoa,CRLF,LAPkMo,MOGS,PeFl,RFS,RnSn,SwHk,SwPT,TPkMo,WRBat,	DETO	NA	No	No	L	Moderate	M	None	None	Yes
B	1.8	1.9	2, 2A, 3	15.1	15.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFl,	DETO	NA	No	No	L	Moderate	M	None	None	Yes

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
I	31	31.1	3	74.5	74.6	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	31.1	31.2	3	74.6	74.7	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	31.2	31.3	3	74.7	74.8	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	31.3	31.4	3	74.8	74.9	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	31.4	31.5	3	74.9	75	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	31.5	31.6	3	75	75.1	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	31.6	31.7	3	75.1	75.2	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	ARTO,WIFL,CRLF,LBV,UTS,
I	31.7	31.8	3	75.2	75.3	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	ARTO,WIFL,CRLF,LBV,UTS,
I	31.8	31.9	3	75.3	75.4	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	ARTO,WIFL,CRLF,
I	31.9	32	3	75.4	75.5	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	ARTO,WIFL,CRLF,LBV,
I	32	32.1	3	75.5	75.6	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	ARTO,WIFL,CRLF,LBV,
I	32.1	32.2	3	75.6	75.7	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	ARTO,WIFL,CRLF,LBV,

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Vegetation Based Wildlife Habitat	Wildlife Range	Riparian Conservation Area	Wildlife Corridor	Critical Habitat	Avian Assessment Impacts	Wildlife Initial Sensitivity	Wildlife Initial Impact	Known Special Status Plant Species	Known Weed Species	Joshua Trees Present
A	0	0.1	1, 2, 2A, 3	0	0.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	0.1	0.2	1, 2, 2A, 3	0.1	0.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	0.2	0.3	1, 2, 2A, 3	0.2	0.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	0.3	0.4	1, 2, 2A, 3	0.3	0.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	0.4	0.5	1, 2, 2A, 3	0.4	0.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	0.5	0.6	1, 2, 2A, 3	0.5	0.6	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	0.6	0.7	1, 2, 2A, 3	0.6	0.7	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	0.7	0.8	1, 2, 2A, 3	0.7	0.8	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	0.8	0.9	1, 2, 2A, 3	0.8	0.9	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	SIOR4	No
A	0.9	1	1, 2, 2A, 3	0.9	1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	1	1.1	1, 2, 2A, 3	1	1.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	1.1	1.2	1, 2, 2A, 3	1.1	1.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	1.2	1.3	1, 2, 2A, 3	1.2	1.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	1.3	1.4	1, 2, 2A, 3	1.3	1.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	1.4	1.5	1, 2, 2A, 3	1.4	1.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	1.5	1.6	1, 2, 2A, 3	1.5	1.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	1.6	1.7	1, 2, 2A, 3	1.6	1.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	1.7	1.8	1, 2, 2A, 3	1.7	1.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	1.8	1.9	1, 2, 2A, 3	1.8	1.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	1.9	2	1, 2, 2A, 3	1.9	2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	2	2.1	1, 2, 2A, 3	2	2.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	2.1	2.2	1, 2, 2A, 3	2.1	2.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	2.2	2.3	1, 2, 2A, 3	2.2	2.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	2.3	2.4	1, 2, 2A, 3	2.3	2.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	2.4	2.5	1, 2, 2A, 3	2.4	2.5	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	2.5	2.6	1, 2, 2A, 3	2.5	2.6	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	2.6	2.7	1, 2, 2A, 3	2.6	2.7	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	2.7	2.8	1, 2, 2A, 3	2.7	2.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	2.8	2.9	1, 2, 2A, 3	2.8	2.9	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	2.9	3	1, 2, 2A, 3	2.9	3	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	3	3.1	1, 2, 2A, 3	3	3.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	3.1	3.2	1, 2, 2A, 3	3.1	3.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	3.2	3.3	1, 2, 2A, 3	3.2	3.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	3.3	3.4	1, 2, 2A, 3	3.3	3.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	3.4	3.5	1, 2, 2A, 3	3.4	3.5	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	3.5	3.6	1, 2, 2A, 3	3.5	3.6	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	3.6	3.7	1, 2, 2A, 3	3.6	3.7	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	3.7	3.8	1, 2, 2A, 3	3.7	3.8	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	3.8	3.9	1, 2, 2A, 3	3.8	3.9	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	3.9	4	1, 2, 2A, 3	3.9	4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	4	4.1	1, 2, 2A, 3	4	4.1	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	4.1	4.2	1, 2, 2A, 3	4.1	4.2	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	4.2	4.3	1, 2, 2A, 3	4.2	4.3	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	4.3	4.4	1, 2, 2A, 3	4.3	4.4	Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Moderate	M	None	None	No
A	4.4	4.5	1, 2, 2A, 3	4.4	4.5	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	4.5	4.6	1, 2, 2A, 3	4.5	4.6	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	4.6	4.7	1, 2, 2A, 3	4.6	4.7	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	4.7	4.8	1, 2, 2A, 3	4.7	4.8	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	4.8	4.9	1, 2, 2A, 3	4.8	4.9	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	4.9	5	1, 2, 2A, 3	4.9	5	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No
A	5	5.1	1, 2, 2A, 3	5	5.1	ARTO,Bowl,CACO,CaLL,CHL,CRBoa,MOGS,PeFI,	DETO, MOGS	NA	No	No	L	Maximum	H	None	None	No

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
I	20.6	20.7	3	64.1	64.2	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	20.7	20.8	3	64.2	64.3	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	20.8	20.9	3	64.3	64.4	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	20.9	21	3	64.4	64.5	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	21	21.1	3	64.5	64.6	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	21.1	21.2	3	64.6	64.7	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	21.2	21.3	3	64.7	64.8	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	21.3	21.4	3	64.8	64.9	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	21.4	21.5	3	64.9	65	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	21.5	21.6	3	65	65.1	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	21.6	21.7	3	65.1	65.2	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	21.7	21.8	3	65.2	65.3	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	21.8	21.9	3	65.3	65.4	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	21.9	22	3	65.4	65.5	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	22	22.1	3	65.5	65.6	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	22.1	22.2	3	65.6	65.7	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	22.2	22.3	3	65.7	65.8	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	22.3	22.4	3	65.8	65.9	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	22.4	22.5	3	65.9	66	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	22.5	22.6	3	66	66.1	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	22.6	22.7	3	66.1	66.2	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	22.7	22.8	3	66.2	66.3	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	22.8	22.9	3	66.3	66.4	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	22.9	23	3	66.4	66.5	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	23	23.1	3	66.5	66.6	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	23.1	23.2	3	66.6	66.7	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	23.2	23.3	3	66.7	66.8	>30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
I	23.3	23.4	3	66.8	66.9	>30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	Unknown	Unknown
I	23.4	23.5	3	66.9	67	>30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	Unknown	Unknown
I	23.5	23.6	3	67	67.1	>30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	Unknown	Unknown
I	23.6	23.7	3	67.1	67.2	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	23.7	23.8	3	67.2	67.3	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	23.8	23.9	3	67.3	67.4	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	23.9	24	3	67.4	67.5	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	24	24.1	3	67.5	67.6	>30	6	No	No	Double Circuit	7.79	10.12	1.37	1.76	G	Unknown	Unknown
I	24.1	24.2	3	67.6	67.7	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	24.2	24.3	3	67.7	67.8	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	24.3	24.4	3	67.8	67.9	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	24.4	24.5	3	67.9	68	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	24.5	24.6	3	68	68.1	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	24.6	24.7	3	68.1	68.2	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	LBV,WIFL
I	24.7	24.8	3	68.2	68.3	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	LBV,WIFL
I	24.8	24.9	3	68.3	68.4	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	24.9	25	3	68.4	68.5	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	25	25.1	3	68.5	68.6	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	25.1	25.2	3	68.6	68.7	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	25.2	25.3	3	68.7	68.8	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	25.3	25.4	3	68.8	68.9	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	25.4	25.5	3	68.9	69	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	25.5	25.6	3	69	69.1	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	25.6	25.7	3	69.1	69.2	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	ARTO, CRLF, LBV, WIFL
I	25.7	25.8	3	69.2	69.3	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	ARTO, CRLF, LBV, WIFL

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
I	25.8	25.9	3	69.3	69.4	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	ARTO, CRLF, LBV, WIFL
I	25.9	26	3	69.4	69.5	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	ARTO, LBV, WIFL
I	26	26.1	3	69.5	69.6	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	26.1	26.2	3	69.6	69.7	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	26.2	26.3	3	69.7	69.8	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	26.3	26.4	3	69.8	69.9	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	26.4	26.5	3	69.9	70	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	26.5	26.6	3	70	70.1	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	26.6	26.7	3	70.1	70.2	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	26.7	26.8	3	70.2	70.3	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	26.8	26.9	3	70.3	70.4	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	26.9	27	3	70.4	70.5	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	27	27.1	3	70.5	70.6	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	27.1	27.2	3	70.6	70.7	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	27.2	27.3	3	70.7	70.8	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	27.3	27.4	3	70.8	70.9	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	27.4	27.5	3	70.9	71	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	27.5	27.6	3	71	71.1	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	27.6	27.7	3	71.1	71.2	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	27.7	27.8	3	71.2	71.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	27.8	27.9	3	71.3	71.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	27.9	28	3	71.4	71.5	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	28	28.1	3	71.5	71.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	28.1	28.2	3	71.6	71.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	28.2	28.3	3	71.7	71.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	28.3	28.4	3	71.8	71.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	28.4	28.5	3	71.9	72	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	28.5	28.6	3	72	72.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	28.6	28.7	3	72.1	72.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	28.7	28.8	3	72.2	72.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	28.8	28.9	3	72.3	72.4	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	28.9	29	3	72.4	72.5	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	29	29.1	3	72.5	72.6	20-30	5	No	No	Double Circuit	3.14	4.3	0.95	1.34	L	Unknown	Unknown
I	29.1	29.2	3	72.6	72.7	20-30	5	No	No	Double Circuit	3.14	4.3	0.95	1.34	L	Unknown	Unknown
I	29.2	29.3	3	72.7	72.8	20-30	5	No	No	Double Circuit	3.14	4.3	0.95	1.34	L	Unknown	Unknown
I	29.3	29.4	3	72.8	72.9	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	29.4	29.5	3	72.9	73	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	29.5	29.6	3	73	73.1	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	29.6	29.7	3	73.1	73.2	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	29.7	29.8	3	73.2	73.3	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	29.8	29.9	3	73.3	73.4	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	29.9	30	3	73.4	73.5	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	30	30.1	3	73.5	73.6	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	30.1	30.2	3	73.6	73.7	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	30.2	30.3	3	73.7	73.8	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	30.3	30.4	3	73.8	73.9	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	30.4	30.5	3	73.9	74	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	30.5	30.6	3	74	74.1	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	30.6	30.7	3	74.1	74.2	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	30.7	30.8	3	74.2	74.3	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	30.8	30.9	3	74.3	74.4	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	30.9	31	3	74.4	74.5	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
I	10.2	10.3	3	53.7	53.8	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	10.3	10.4	3	53.8	53.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	10.4	10.5	3	53.9	54	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	10.5	10.6	3	54	54.1	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	10.6	10.7	3	54.1	54.2	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	10.7	10.8	3	54.2	54.3	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	10.8	10.9	3	54.3	54.4	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	10.9	11	3	54.4	54.5	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	11	11.1	3	54.5	54.6	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	11.1	11.2	3	54.6	54.7	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	11.2	11.3	3	54.7	54.8	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	11.3	11.4	3	54.8	54.9	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	11.4	11.5	3	54.9	55	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	11.5	11.6	3	55	55.1	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	11.6	11.7	3	55.1	55.2	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	11.7	11.8	3	55.2	55.3	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	11.8	11.9	3	55.3	55.4	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	11.9	12	3	55.4	55.5	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	12	12.1	3	55.5	55.6	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	12.1	12.2	3	55.6	55.7	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	12.2	12.3	3	55.7	55.8	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	12.3	12.4	3	55.8	55.9	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	12.4	12.5	3	55.9	56	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	12.5	12.6	3	56	56.1	20-30	5	No	No	Double Circuit	3.14	4.3	0.95	1.34	G	Unknown	Unknown
I	12.6	12.7	3	56.1	56.2	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	12.7	12.8	3	56.2	56.3	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	12.8	12.9	3	56.3	56.4	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	12.9	13	3	56.4	56.5	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	13	13.1	3	56.5	56.6	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	13.1	13.2	3	56.6	56.7	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	13.2	13.3	3	56.7	56.8	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	13.3	13.4	3	56.8	56.9	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	13.4	13.5	3	56.9	57	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	13.5	13.6	3	57	57.1	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	13.6	13.7	3	57.1	57.2	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	13.7	13.8	3	57.2	57.3	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	13.8	13.9	3	57.3	57.4	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	13.9	14	3	57.4	57.5	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	14	14.1	3	57.5	57.6	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	14.1	14.2	3	57.6	57.7	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	14.2	14.3	3	57.7	57.8	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	14.3	14.4	3	57.8	57.9	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	14.4	14.5	3	57.9	58	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	14.5	14.6	3	58	58.1	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	14.6	14.7	3	58.1	58.2	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	14.7	14.8	3	58.2	58.3	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	14.8	14.9	3	58.3	58.4	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	14.9	15	3	58.4	58.5	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	15	15.1	3	58.5	58.6	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	15.1	15.2	3	58.6	58.7	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	15.2	15.3	3	58.7	58.8	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	15.3	15.4	3	58.8	58.9	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
I	15.4	15.5	3	58.9	59	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	15.5	15.6	3	59	59.1	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	15.6	15.7	3	59.1	59.2	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	15.7	15.8	3	59.2	59.3	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	15.8	15.9	3	59.3	59.4	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	15.9	16	3	59.4	59.5	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	16	16.1	3	59.5	59.6	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	16.1	16.2	3	59.6	59.7	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	16.2	16.3	3	59.7	59.8	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	16.3	16.4	3	59.8	59.9	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	16.4	16.5	3	59.9	60	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	16.5	16.6	3	60	60.1	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	16.6	16.7	3	60.1	60.2	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	16.7	16.8	3	60.2	60.3	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	16.8	16.9	3	60.3	60.4	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	16.9	17	3	60.4	60.5	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	17	17.1	3	60.5	60.6	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	17.1	17.2	3	60.6	60.7	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	17.2	17.3	3	60.7	60.8	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	17.3	17.4	3	60.8	60.9	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	17.4	17.5	3	60.9	61	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	17.5	17.6	3	61	61.1	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	17.6	17.7	3	61.1	61.2	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	17.7	17.8	3	61.2	61.3	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	17.8	17.9	3	61.3	61.4	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	17.9	18	3	61.4	61.5	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	18	18.1	3	61.5	61.6	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	18.1	18.2	3	61.6	61.7	20-30	5	No	No	Double Circuit	3.14	4.3	0.95	1.34	G	Unknown	Unknown
I	18.2	18.3	3	61.7	61.8	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	18.3	18.4	3	61.8	61.9	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	18.4	18.5	3	61.9	62	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	18.5	18.6	3	62	62.1	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	18.6	18.7	3	62.1	62.2	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	18.7	18.8	3	62.2	62.3	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	18.8	18.9	3	62.3	62.4	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	Unknown	Unknown
I	18.9	19	3	62.4	62.5	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	Unknown	Unknown
I	19	19.1	3	62.5	62.6	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	Unknown	Unknown
I	19.1	19.2	3	62.6	62.7	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	Unknown	Unknown
I	19.2	19.3	3	62.7	62.8	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	Unknown	Unknown
I	19.3	19.4	3	62.8	62.9	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
I	19.4	19.5	3	62.9	63	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
I	19.5	19.6	3	63	63.1	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
I	19.6	19.7	3	63.1	63.2	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
I	19.7	19.8	3	63.2	63.3	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	19.8	19.9	3	63.3	63.4	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	19.9	20	3	63.4	63.5	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	20	20.1	3	63.5	63.6	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	20.1	20.2	3	63.6	63.7	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	20.2	20.3	3	63.7	63.8	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	20.3	20.4	3	63.8	63.9	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	20.4	20.5	3	63.9	64	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
I	20.5	20.6	3	64	64.1	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
H2	16.9	17	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	Unknown
H2	17	17.1	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	ARTO,WIFL,
I	0	0.1	3	43.5	43.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	0.1	0.2	3	43.6	43.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	0.2	0.3	3	43.7	43.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	0.3	0.4	3	43.8	43.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	0.4	0.5	3	43.9	44	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	0.5	0.6	3	44	44.1	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	0.6	0.7	3	44.1	44.2	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	0.7	0.8	3	44.2	44.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	0.8	0.9	3	44.3	44.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	0.9	1	3	44.4	44.5	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	1	1.1	3	44.5	44.6	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	1.1	1.2	3	44.6	44.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	1.2	1.3	3	44.7	44.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	1.3	1.4	3	44.8	44.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	1.4	1.5	3	44.9	45	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	1.5	1.6	3	45	45.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	1.6	1.7	3	45.1	45.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	1.7	1.8	3	45.2	45.3	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	1.8	1.9	3	45.3	45.4	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	1.9	2	3	45.4	45.5	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	2	2.1	3	45.5	45.6	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	2.1	2.2	3	45.6	45.7	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	2.2	2.3	3	45.7	45.8	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	2.3	2.4	3	45.8	45.9	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	2.4	2.5	3	45.9	46	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	2.5	2.6	3	46	46.1	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	2.6	2.7	3	46.1	46.2	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	2.7	2.8	3	46.2	46.3	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	2.8	2.9	3	46.3	46.4	0-10	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	2.9	3	3	46.4	46.5	0-10	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	3	3.1	3	46.5	46.6	0-10	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	3.1	3.2	3	46.6	46.7	0-10	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	3.2	3.3	3	46.7	46.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	3.3	3.4	3	46.8	46.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	3.4	3.5	3	46.9	47	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	3.5	3.6	3	47	47.1	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	3.6	3.7	3	47.1	47.2	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	3.7	3.8	3	47.2	47.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	3.8	3.9	3	47.3	47.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	3.9	4	3	47.4	47.5	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	4	4.1	3	47.5	47.6	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	4.1	4.2	3	47.6	47.7	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	4.2	4.3	3	47.7	47.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	4.3	4.4	3	47.8	47.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	4.4	4.5	3	47.9	48	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	4.5	4.6	3	48	48.1	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	4.6	4.7	3	48.1	48.2	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	4.7	4.8	3	48.2	48.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	4.8	4.9	3	48.3	48.4	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	4.9	5	3	48.4	48.5	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
I	5	5.1	3	48.5	48.6	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	5.1	5.2	3	48.6	48.7	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	5.2	5.3	3	48.7	48.8	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	5.3	5.4	3	48.8	48.9	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	5.4	5.5	3	48.9	49	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	5.5	5.6	3	49	49.1	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	5.6	5.7	3	49.1	49.2	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	5.7	5.8	3	49.2	49.3	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	5.8	5.9	3	49.3	49.4	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	5.9	6	3	49.4	49.5	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	6	6.1	3	49.5	49.6	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	6.1	6.2	3	49.6	49.7	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	6.2	6.3	3	49.7	49.8	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	CHL	Unknown
I	6.3	6.4	3	49.8	49.9	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	CHL	Unknown
I	6.4	6.5	3	49.9	50	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	CHL	Unknown
I	6.5	6.6	3	50	50.1	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	6.6	6.7	3	50.1	50.2	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	6.7	6.8	3	50.2	50.3	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	6.8	6.9	3	50.3	50.4	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	6.9	7	3	50.4	50.5	>30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	7	7.1	3	50.5	50.6	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	7.1	7.2	3	50.6	50.7	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	7.2	7.3	3	50.7	50.8	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	7.3	7.4	3	50.8	50.9	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	7.4	7.5	3	50.9	51	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	7.5	7.6	3	51	51.1	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	7.6	7.7	3	51.1	51.2	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	7.7	7.8	3	51.2	51.3	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	7.8	7.9	3	51.3	51.4	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	7.9	8	3	51.4	51.5	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	8	8.1	3	51.5	51.6	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	8.1	8.2	3	51.6	51.7	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
I	8.2	8.3	3	51.7	51.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	8.3	8.4	3	51.8	51.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
I	8.4	8.5	3	51.9	52	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	Unknown	Unknown
I	8.5	8.6	3	52	52.1	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	Unknown	Unknown
I	8.6	8.7	3	52.1	52.2	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	8.7	8.8	3	52.2	52.3	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	8.8	8.9	3	52.3	52.4	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	8.9	9	3	52.4	52.5	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	9	9.1	3	52.5	52.6	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	9.1	9.2	3	52.6	52.7	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	9.2	9.3	3	52.7	52.8	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	9.3	9.4	3	52.8	52.9	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	9.4	9.5	3	52.9	53	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	9.5	9.6	3	53	53.1	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	9.6	9.7	3	53.1	53.2	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	9.7	9.8	3	53.2	53.3	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	9.8	9.9	3	53.3	53.4	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	9.9	10	3	53.4	53.5	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	10	10.1	3	53.5	53.6	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
I	10.1	10.2	3	53.6	53.7	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
H2	6.5	6.6	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	SOWL,
H2	6.6	6.7	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	SOWL,
H2	6.7	6.8	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	Unknown
H2	6.8	6.9	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	Unknown
H2	6.9	7	None			10-20	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	Unknown
H2	7	7.1	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	Unknown
H2	7.1	7.2	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	Unknown
H2	7.2	7.3	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	SOWL,
H2	7.3	7.4	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	ARTO,WIFL,LBV,UTS,SOWL,
H2	7.4	7.5	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	ARTO,WIFL,CRLF,LBV,UTS,SOWL,
H2	7.5	7.6	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	ARTO,WIFL,CRLF,LBV,UTS,SOWL,
H2	7.6	7.7	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	SOWL,
H2	7.7	7.8	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	SOWL,
H2	7.8	7.9	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	SOWL,
H2	7.9	8	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	SOWL,
H2	8	8.1	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	8.1	8.2	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	8.2	8.3	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	8.3	8.4	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	8.4	8.5	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	8.5	8.6	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	8.6	8.7	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	8.7	8.8	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	8.8	8.9	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	8.9	9	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	9	9.1	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	9.1	9.2	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	9.2	9.3	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	9.3	9.4	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	9.4	9.5	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	9.5	9.6	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	9.6	9.7	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	9.7	9.8	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	9.8	9.9	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	9.9	10	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	10	10.1	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	10.1	10.2	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	10.2	10.3	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	10.3	10.4	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	10.4	10.5	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	10.5	10.6	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	10.6	10.7	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	10.7	10.8	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	10.8	10.9	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	10.9	11	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	11	11.1	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	11.1	11.2	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	11.2	11.3	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	11.3	11.4	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	11.4	11.5	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	11.5	11.6	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	11.6	11.7	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
H2	11.7	11.8	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	11.8	11.9	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	11.9	12	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	12	12.1	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	12.1	12.2	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	12.2	12.3	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	12.3	12.4	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	12.4	12.5	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	12.5	12.6	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	12.6	12.7	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	12.7	12.8	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	12.8	12.9	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	12.9	13	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	13	13.1	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	13.1	13.2	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	13.2	13.3	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	13.3	13.4	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	13.4	13.5	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	13.5	13.6	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	13.6	13.7	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	13.7	13.8	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	13.8	13.9	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	WIFL,LBV,
H2	13.9	14	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	WIFL,LBV,
H2	14	14.1	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	WIFL,LBV,
H2	14.1	14.2	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	WIFL,
H2	14.2	14.3	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	WIFL,
H2	14.3	14.4	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	14.4	14.5	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	14.5	14.6	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	14.6	14.7	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	14.7	14.8	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	14.8	14.9	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	14.9	15	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	WIFL,
H2	15	15.1	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	WIFL,
H2	15.1	15.2	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	WIFL,
H2	15.2	15.3	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	WIFL,LBV,
H2	15.3	15.4	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	WIFL,CRLF,LBV,
H2	15.4	15.5	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	WIFL,CRLF,LBV,
H2	15.5	15.6	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	ARTO,WIFL,CRLF,LBV,
H2	15.6	15.7	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	ARTO,WIFL,CRLF,LBV,
H2	15.7	15.8	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	15.8	15.9	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	15.9	16	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	16	16.1	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	WIFL,
H2	16.1	16.2	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	WIFL,LBV,
H2	16.2	16.3	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	WIFL,LBV,
H2	16.3	16.4	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	Unknown
H2	16.4	16.5	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	Unknown
H2	16.5	16.6	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	ARTO,WIFL,CRLF,LBV,
H2	16.6	16.7	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	ARTO,WIFL,CRLF,LBV,
H2	16.7	16.8	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	ARTO,WIFL,CRLF,LBV,
H2	16.8	16.9	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
115	3.7	3.8	None			10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	3.8	3.9	None			10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	3.9	4	None			10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	4	4.1	None			10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	4.1	4.2	None			10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
115	4.2	4.3	None			10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
115	4.3	4.4	None			20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
115	4.4	4.5	None			10-20	4	No	No	Double Circuit	1.54	1.97	0.6	0.89	L	Unknown	Unknown
115	4.5	4.6	None			10-20	4	No	No	Double Circuit	1.54	1.97	0.6	0.89	L	Unknown	Unknown
115	4.6	4.7	None			10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	4.7	4.8	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H1	0	0.1	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
H1	0.1	0.2	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
H1	0.2	0.3	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H1	0.3	0.4	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H1	0.4	0.5	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H1	0.5	0.6	None			0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
H1	0.6	0.7	None			0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
H1	0.7	0.8	None			0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
H1	0.8	0.9	None			0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
H1	0.9	1	None			0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
H1	1	1.1	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
H1	1.1	1.2	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
H1	1.2	1.3	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
H1	1.3	1.4	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
H1	1.4	1.5	None			0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
H1	1.5	1.6	None			0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
H1	1.6	1.7	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H1	1.7	1.8	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H1	1.8	1.9	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H1	1.9	2	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H1	2	2.1	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H1	2.1	2.2	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H1	2.2	2.3	None			10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H1	2.3	2.4	None			20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H1	2.4	2.5	None			20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H1	2.5	2.6	None			20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H1	2.6	2.7	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H1	2.7	2.7	None			10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H2	0	0.1	None			20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H2	0.1	0.2	None			20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H2	0.2	0.3	None			>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H2	0.3	0.4	None			>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H2	0.4	0.5	None			20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H2	0.5	0.6	None			10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H2	0.6	0.7	None			10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H2	0.7	0.8	None			10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H2	0.8	0.9	None			20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H2	0.9	1	None			10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H2	1	1.1	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H2	1.1	1.2	None			10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H2	1.2	1.3	None			10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
H2	1.3	1.4	None			10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H2	1.4	1.5	None			10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
H2	1.5	1.6	None			10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
H2	1.6	1.7	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
H2	1.7	1.8	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H2	1.8	1.9	None			10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H2	1.9	2	None			10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H2	2	2.1	None			10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H2	2.1	2.2	None			20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H2	2.2	2.3	None			20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H2	2.3	2.4	None			20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H2	2.4	2.5	None			20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
H2	2.5	2.6	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	Unknown
H2	2.6	2.7	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	Unknown
H2	2.7	2.8	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	Unknown
H2	2.8	2.9	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	Unknown
H2	2.9	3	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	Unknown
H2	3	3.1	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	3.1	3.2	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	3.2	3.3	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	3.3	3.4	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	3.4	3.5	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	3.5	3.6	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	3.6	3.7	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	3.7	3.8	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	3.8	3.9	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	3.9	4	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	4	4.1	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	SOWL,
H2	4.1	4.2	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	4.2	4.3	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	4.3	4.4	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	4.4	4.5	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	4.5	4.6	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	4.6	4.7	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	4.7	4.8	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	4.8	4.9	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
H2	4.9	5	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	WIFL,
H2	5	5.1	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	WIFL,
H2	5.1	5.2	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	WIFL,
H2	5.2	5.3	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	ARTO,WIFL,CRLF,
H2	5.3	5.4	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	ARTO,WIFL,CRLF,
H2	5.4	5.5	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	ARTO,WIFL,CRLF,
H2	5.5	5.6	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	SOWL,
H2	5.6	5.7	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	ARTO,WIFL,CRLF,SOWL,
H2	5.7	5.8	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	ARTO,WIFL,CRLF,SOWL,
H2	5.8	5.9	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	SOWL,
H2	5.9	6	None			>30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	SOWL,
H2	6	6.1	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	SOWL,
H2	6.1	6.2	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	SOWL,
H2	6.2	6.3	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	SOWL,
H2	6.3	6.4	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	SOWL,
H2	6.4	6.5	None			20-30	H	No	No	Double Circuit	0.52	0.61	0.09	0.15	L	Unknown	SOWL,

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
2a	3.6	3.7	2A	3.6	3.7	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	3.7	3.8	2A	3.7	3.8	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	CHL	Unknown
2a	3.8	3.9	2A	3.8	3.9	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	CHL	Unknown
2a	3.9	4	2A	3.9	4	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	CHL	Unknown
2a	4	4.1	2A	4	4.1	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	4.1	4.2	2A	4.1	4.2	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	4.2	4.3	2A	4.2	4.3	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
2a	4.3	4.4	2A	4.3	4.4	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
2a	4.4	4.5	2A	4.4	4.5	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	4.5	4.6	2A	4.5	4.6	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	4.6	4.7	2A	4.6	4.7	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	4.7	4.8	2A	4.7	4.8	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	4.8	4.9	2A	4.8	4.9	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	4.9	5	2A	4.9	5	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	5	5.1	2A	5	5.1	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	5.1	5.2	2A	5.1	5.2	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	5.2	5.3	2A	5.2	5.3	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	5.3	5.4	2A	5.3	5.4	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	WIFL,
2a	5.4	5.5	2A	5.4	5.5	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	WIFL,
2a	5.5	5.6	2A	5.5	5.6	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	WIFL,
2a	5.6	5.7	2A	5.6	5.7	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	5.7	5.8	2A	5.7	5.8	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	5.8	5.9	2A	5.8	5.9	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	5.9	6	2A	5.9	6	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	6	6.1	2A	6	6.1	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	6.1	6.2	2A	6.1	6.2	10-20	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	6.2	6.3	2A	6.2	6.3	10-20	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	6.3	6.4	2A	6.3	6.4	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	6.4	6.5	2A	6.4	6.5	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
2a	6.5	6.6	2A	6.5	6.6	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
F2	0	0.1	3	40.7	40.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
F1	0	0.1	3	39.8	39.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
F1	0.1	0.2	3	39.9	40	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
F2	0.1	0.2	3	40.8	40.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
F1	0.2	0.3	3	40	40.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
F2	0.2	0.3	3	40.9	41	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
F1	0.3	0.4	3	40.1	40.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
F2	0.3	0.4	3	41	41.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
F1	0.4	0.5	3	40.2	40.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
F2	0.4	0.5	3	41.1	41.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
F1	0.5	0.6	3	40.3	40.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
F2	0.5	0.6	3	41.2	41.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
F1	0.6	0.7	3	40.4	40.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
F2	0.6	0.7	3	41.3	41.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
F1	0.7	0.8	3	40.5	40.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
F2	0.7	0.8	3	41.4	41.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
F1	0.8	0.8	3	40.6	40.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
F2	0.8	0.9	3	41.5	41.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
F2	0.9	1	3	41.6	41.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
F2	1	1.1	3	41.7	41.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
F2	1.1	1.2	3	41.8	41.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
F2	1.2	1.3	3	41.9	42	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
F2	1.3	1.4	3	42	42.1	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
F2	1.4	1.5	3	42.1	42.2	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
F2	1.5	1.6	3	42.2	42.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
F2	1.6	1.7	3	42.3	42.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
F2	1.7	1.8	3	42.4	42.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
F2	1.8	1.9	3	42.5	42.6	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
F2	1.9	2	3	42.6	42.7	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
F2	2	2.1	3	42.7	42.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
F2	2.1	2.2	3	42.8	42.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
F2	2.2	2.3	3	42.9	43	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
F2	2.3	2.4	3	43	43.1	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
F2	2.4	2.5	3	43.1	43.2	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
F2	2.5	2.6	3	43.2	43.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
F2	2.6	2.7	3	43.3	43.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
F2	2.7	2.8	3	43.4	43.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
115	0	0.1	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
115	0.1	0.2	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	0.2	0.3	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	0.3	0.4	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	0.4	0.5	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	0.5	0.6	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	0.6	0.7	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	0.7	0.8	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	0.8	0.9	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	0.9	1	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	1	1.1	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	1.1	1.2	None			0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
115	1.2	1.3	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
115	1.3	1.4	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
115	1.4	1.5	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
115	1.5	1.6	None			0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
115	1.6	1.7	None			0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
115	1.7	1.8	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	1.8	1.9	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	1.9	2	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	2	2.1	None			0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
115	2.1	2.2	None			0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
115	2.2	2.3	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
115	2.3	2.4	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
115	2.4	2.5	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
115	2.5	2.6	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	2.6	2.7	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	2.7	2.8	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	2.8	2.9	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	2.9	3	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	3	3.1	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	3.1	3.2	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	3.2	3.3	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	3.3	3.4	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	3.4	3.5	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	3.5	3.6	None			10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
115	3.6	3.7	None			10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
G	14.2	14.3	2, 2A	54	54.1	20-30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
G	14.3	14.4	2, 2A	54.1	54.2	>30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
G	14.4	14.5	2, 2A	54.2	54.3	>30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
G	14.5	14.6	2, 2A	54.3	54.4	>30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
G	14.6	14.7	2, 2A	54.4	54.5	>30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
G	14.7	14.8	2, 2A	54.5	54.6	>30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
G	14.8	14.9	2, 2A	54.6	54.7	20-30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
G	14.9	15	2, 2A	54.7	54.8	20-30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
G	15	15.1	2, 2A	54.8	54.9	20-30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
G	15.1	15.2	2, 2A	54.9	55	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	15.2	15.3	2, 2A	55	55.1	>30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	15.3	15.4	2, 2A	55.1	55.2	>30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	15.4	15.5	2, 2A	55.2	55.3	>30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	15.5	15.6	2, 2A	55.3	55.4	>30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	15.6	15.7	2, 2A	55.4	55.5	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	LBV, WIFL,
G	15.7	15.8	2, 2A	55.5	55.6	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	LBV, WIFL,
G	15.8	15.9	2, 2A	55.6	55.7	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	LBV, WIFL,
G	15.9	16	2, 2A	55.7	55.8	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	16	16.1	2, 2A	55.8	55.9	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	16.1	16.2	2, 2A	55.9	56	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	16.2	16.3	2, 2A	56	56.1	10-20	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	LBV, WIFL,
G	16.3	16.4	2, 2A	56.1	56.2	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	LBV, WIFL,
G	16.4	16.5	2, 2A	56.2	56.3	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	LBV, WIFL,
G	16.5	16.6	2, 2A	56.3	56.4	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	ARTO, LBV, WIFL,
G	16.6	16.7	2, 2A	56.4	56.5	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	ARTO, LBV, WIFL,
G	16.7	16.8	2, 2A	56.5	56.6	10-20	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	ARTO, WIFL,
G	16.8	16.9	2, 2A	56.6	56.7	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	ARTO, CRLF, LBV, WIFL,
G	16.9	17	2, 2A	56.7	56.8	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	ARTO, CRLF, LBV, WIFL,
G	17	17.1	2, 2A	56.8	56.9	20-30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	ARTO, CRLF, LBV, WIFL,
G	17.1	17.2	2, 2A	56.9	57	20-30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	ARTO, CRLF, LBV, WIFL,
G	17.2	17.3	2, 2A	57	57.1	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	ARTO, CRLF, LBV, WIFL,
G	17.3	17.4	2, 2A	57.1	57.2	10-20	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	ARTO, CRLF, LBV, WIFL,
G	17.4	17.5	2, 2A	57.2	57.3	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	ARTO, CRLF, LBV, WIFL,
G	17.5	17.6	2, 2A	57.3	57.4	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	ARTO, CRLF, LBV, WIFL,
G	17.6	17.7	2, 2A	57.4	57.5	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	ARTO, CRLF, LBV, WIFL,
G	17.7	17.8	2, 2A	57.5	57.6	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	ARTO, CRLF, LBV, WIFL,
G	17.8	17.9	2, 2A	57.6	57.7	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	ARTO, CRLF, LBV, WIFL,
G	17.9	18	2, 2A	57.7	57.8	20-30	5	Yes	No	Double Circuit	3.14	4.3	0.95	1.34	M	Unknown	ARTO, CRLF, LBV, WIFL,
G	18	18.1	2, 2A	57.8	57.9	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	ARTO, CRLF, LBV, WIFL,
G	18.1	18.2	2, 2A	57.9	58	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	ARTO, CRLF, LBV, WIFL,
G	18.2	18.3	2, 2A	58	58.1	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	WIFL
G	18.3	18.4	2, 2A	58.1	58.2	>30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	WIFL
G	18.4	18.5	2, 2A	58.2	58.3	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	18.5	18.6	2, 2A	58.3	58.4	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	18.6	18.7	2, 2A	58.4	58.5	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	18.7	18.8	2, 2A	58.5	58.6	10-20	1	Yes	No	Existing Quad	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	18.8	18.9	2, 2A	58.6	58.7	10-20	1	Yes	No	Existing Quad	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	18.9	19	2, 2A	58.7	58.8	10-20	1	Yes	No	Existing Quad	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	19	19.1	2, 2A	58.8	58.9	20-30	1	Yes	No	Existing Quad	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	19.1	19.2	2, 2A	58.9	59	>30	1	Yes	No	Existing Quad	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	19.2	19.3	2, 2A	59	59.1	>30	1	Yes	No	Existing Quad	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	19.3	19.4	2, 2A	59.1	59.2	>30	1	Yes	No	Existing Quad	0.65	0.65	0.08	0.08	M	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
G	19.4	19.5	2, 2A	59.2	59.3	20-30	1	Yes	No	Existing Quad	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	19.5	19.6	2, 2A	59.3	59.4	10-20	1	Yes	No	Existing Quad	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	19.6	19.7	2, 2A	59.4	59.5	10-20	1	Yes	No	Existing Quad	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	19.7	19.8	2, 2A	59.5	59.6	0-10	1	Yes	No	Existing Quad	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	19.8	19.9	2, 2A	59.6	59.7	0-10	1	Yes	No	Existing Quad	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	19.9	20	2, 2A	59.7	59.8	10-20	1	Yes	No	Existing Quad	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	20	20.1	2, 2A	59.8	59.9	20-30	1	Yes	No	Existing Quad	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	20.1	20.2	2, 2A	59.9	60	20-30	1	Yes	No	Existing Quad	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	20.2	20.3	2, 2A	60	60.1	20-30	1	Yes	No	Existing Quad	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	20.3	20.4	2, 2A	60.1	60.2	20-30	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	20.4	20.5	2, 2A	60.2	60.3	>30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	20.5	20.6	2, 2A	60.3	60.4	>30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	20.6	20.7	2, 2A	60.4	60.5	>30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	WIFL
G	20.7	20.8	2, 2A	60.5	60.6	>30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	WIFL
G	20.8	20.9	2, 2A	60.6	60.7	>30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	WIFL
G	20.9	21	2, 2A	60.7	60.8	>30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	ARTO, WIFL,
2a	0	0.1	2A	0	0.1	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
2a	0.1	0.2	2A	0.1	0.2	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
2a	0.2	0.3	2A	0.2	0.3	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
2a	0.3	0.4	2A	0.3	0.4	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
2a	0.4	0.5	2A	0.4	0.5	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
2a	0.5	0.6	2A	0.5	0.6	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
2a	0.6	0.7	2A	0.6	0.7	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
2a	0.7	0.8	2A	0.7	0.8	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
2a	0.8	0.9	2A	0.8	0.9	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
2a	0.9	1	2A	0.9	1	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	1	1.1	2A	1	1.1	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	1.1	1.2	2A	1.1	1.2	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	WIFL,
2a	1.2	1.3	2A	1.2	1.3	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
2a	1.3	1.4	2A	1.3	1.4	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	1.4	1.5	2A	1.4	1.5	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
2a	1.5	1.6	2A	1.5	1.6	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
2a	1.6	1.7	2A	1.6	1.7	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
2a	1.7	1.8	2A	1.7	1.8	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
2a	1.8	1.9	2A	1.8	1.9	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
2a	1.9	2	2A	1.9	2	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
2a	2	2.1	2A	2	2.1	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
2a	2.1	2.2	2A	2.1	2.2	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	WIFL,
2a	2.2	2.3	2A	2.2	2.3	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	WIFL,
2a	2.3	2.4	2A	2.3	2.4	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
2a	2.4	2.5	2A	2.4	2.5	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
2a	2.5	2.6	2A	2.5	2.6	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	2.6	2.7	2A	2.6	2.7	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	2.7	2.8	2A	2.7	2.8	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	2.8	2.9	2A	2.8	2.9	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
2a	2.9	3	2A	2.9	3	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	3	3.1	2A	3	3.1	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
2a	3.1	3.2	2A	3.1	3.2	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
2a	3.2	3.3	2A	3.2	3.3	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
2a	3.3	3.4	2A	3.3	3.4	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
2a	3.4	3.5	2A	3.4	3.5	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
2a	3.5	3.6	2A	3.5	3.6	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
G	3.8	3.9	2, 2A	43.6	43.7	0-10	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	3.9	4	2, 2A	43.7	43.8	10-20	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	4	4.1	2, 2A	43.8	43.9	20-30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	4.1	4.2	2, 2A	43.9	44	20-30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	4.2	4.3	2, 2A	44	44.1	>30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	4.3	4.4	2, 2A	44.1	44.2	>30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	4.4	4.5	2, 2A	44.2	44.3	>30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	4.5	4.6	2, 2A	44.3	44.4	20-30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	4.6	4.7	2, 2A	44.4	44.5	20-30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	4.7	4.8	2, 2A	44.5	44.6	20-30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	4.8	4.9	2, 2A	44.6	44.7	20-30	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	4.9	5	2, 2A	44.7	44.8	20-30	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	5	5.1	2, 2A	44.8	44.9	10-20	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	5.1	5.2	2, 2A	44.9	45	10-20	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	5.2	5.3	2, 2A	45	45.1	10-20	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	5.3	5.4	2, 2A	45.1	45.2	10-20	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	5.4	5.5	2, 2A	45.2	45.3	0-10	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	5.5	5.6	2, 2A	45.3	45.4	0-10	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	5.6	5.7	2, 2A	45.4	45.5	10-20	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	5.7	5.8	2, 2A	45.5	45.6	10-20	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	5.8	5.9	2, 2A	45.6	45.7	10-20	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	5.9	6	2, 2A	45.7	45.8	0-10	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	6	6.1	2, 2A	45.8	45.9	10-20	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	6.1	6.2	2, 2A	45.9	46	0-10	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	6.2	6.3	2,	46	46.1	0-10	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	6.3	6.4	2,	46.1	46.2	10-20	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	6.4	6.5	2,	46.2	46.3	20-30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	6.5	6.6	2,	46.3	46.4	20-30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	6.6	6.7	2,	46.4	46.5	20-30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	6.7	6.8	2,	46.5	46.6	>30	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	6.8	6.9	2,	46.6	46.7	>30	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	6.9	7	2,	46.7	46.8	>30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	7	7.1	2,	46.8	46.9	>30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	7.1	7.2	2,	46.9	47	>30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	7.2	7.3	2,	47	47.1	>30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	7.3	7.4	2,	47.1	47.2	>30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	7.4	7.5	2,	47.2	47.3	>30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	7.5	7.6	2,	47.3	47.4	>30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	7.6	7.7	2,	47.4	47.5	>30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	7.7	7.8	2,	47.5	47.6	10-20	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	7.8	7.9	2,	47.6	47.7	20-30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	7.9	8	2,	47.7	47.8	20-30	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	8	8.1	2,	47.8	47.9	10-20	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	8.1	8.2	2,	47.9	48	10-20	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	ARTO, CRLF, WIFL,
G	8.2	8.3	2,	48	48.1	10-20	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	ARTO, CRLF, WIFL,
G	8.3	8.4	2,	48.1	48.2	20-30	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	ARTO, WIFL,
G	8.4	8.5	2,	48.2	48.3	20-30	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	ARTO, WIFL,
G	8.5	8.6	2,	48.3	48.4	10-20	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	8.6	8.7	2,	48.4	48.5	10-20	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	ARTO, WIFL,
G	8.7	8.8	2,	48.5	48.6	0-10	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	ARTO, WIFL,
G	8.8	8.9	2,	48.6	48.7	10-20	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	ARTO, WIFL,
G	8.9	9	2,	48.7	48.8	10-20	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
G	9	9.1	2,	48.8	48.9	20-30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	9.1	9.2	2,	48.9	49	20-30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	9.2	9.3	2,	49	49.1	20-30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	9.3	9.4	2,	49.1	49.2	20-30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	9.4	9.5	2,	49.2	49.3	20-30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	9.5	9.6	2,	49.3	49.4	20-30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	9.6	9.7	2,	49.4	49.5	20-30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	9.7	9.8	2,	49.5	49.6	20-30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	9.8	9.9	2,	49.6	49.7	20-30	2	Yes	No	Triple Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	9.9	10	2,	49.7	49.8	20-30	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	10	10.1	2,	49.8	49.9	10-20	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	10.1	10.2	2,	49.9	50	10-20	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	CRBoa	Unknown
G	10.2	10.3	2,	50	50.1	20-30	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	10.3	10.4	2,	50.1	50.2	20-30	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	ARTO, CRLF, LBV, UTS, WIFL,
G	10.4	10.5	2,	50.2	50.3	>30	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	ARTO, CRLF, LBV, WIFL,
G	10.5	10.6	2,	50.3	50.4	20-30	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	10.6	10.7	2,	50.4	50.5	20-30	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	10.7	10.8	2,	50.5	50.6	10-20	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	10.8	10.9	2,	50.6	50.7	10-20	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	10.9	11	2,	50.7	50.8	20-30	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	11	11.1	2, 2A	50.8	50.9	>30	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	11.1	11.2	2, 2A	50.9	51	20-30	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	11.2	11.3	2, 2A	51	51.1	>30	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	11.3	11.4	2, 2A	51.1	51.2	>30	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	11.4	11.5	2, 2A	51.2	51.3	>30	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	11.5	11.6	2, 2A	51.3	51.4	>30	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	11.6	11.7	2, 2A	51.4	51.5	>30	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	11.7	11.8	2, 2A	51.5	51.6	20-30	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	11.8	11.9	2, 2A	51.6	51.7	20-30	1	Yes	No	Triple Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	11.9	12	2, 2A	51.7	51.8	>30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
G	12	12.1	2, 2A	51.8	51.9	>30	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	WIFL
G	12.1	12.2	2, 2A	51.9	52	>30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	ARTO, CRLF, LBV, UTS, WIFL,
G	12.2	12.3	2, 2A	52	52.1	>30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	ARTO, CRLF, LBV, UTS, WIFL,
G	12.3	12.4	2, 2A	52.1	52.2	>30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	ARTO, CRLF, LBV, UTS, WIFL,
G	12.4	12.5	2, 2A	52.2	52.3	>30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	ARTO, CRLF, LBV, UTS, WIFL,
G	12.5	12.6	2, 2A	52.3	52.4	>30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	ARTO, CRLF, LBV, UTS, WIFL,
G	12.6	12.7	2, 2A	52.4	52.5	>30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	ARTO, CRLF, LBV, UTS, WIFL,
G	12.7	12.8	2, 2A	52.5	52.6	20-30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	CRLF, LBV, UTS, WIFL
G	12.8	12.9	2, 2A	52.6	52.7	>30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	UTS, WIFL
G	12.9	13	2, 2A	52.7	52.8	>30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
G	13	13.1	2, 2A	52.8	52.9	>30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
G	13.1	13.2	2, 2A	52.9	53	>30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
G	13.2	13.3	2, 2A	53	53.1	>30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
G	13.3	13.4	2, 2A	53.1	53.2	20-30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
G	13.4	13.5	2, 2A	53.2	53.3	>30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
G	13.5	13.6	2, 2A	53.3	53.4	>30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	ARTO, CRLF, LBV, UTS, WIFL,
G	13.6	13.7	2, 2A	53.4	53.5	>30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	ARTO, CRLF, LBV, UTS, WIFL,
G	13.7	13.8	2, 2A	53.5	53.6	>30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
G	13.8	13.9	2, 2A	53.6	53.7	>30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
G	13.9	14	2, 2A	53.7	53.8	>30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
G	14	14.1	2, 2A	53.8	53.9	20-30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
G	14.1	14.2	2, 2A	53.9	54	20-30	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
E	4.7	4.8	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	4.8	4.9	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	4.9	5	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	5	5.1	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	5.1	5.2	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	5.2	5.3	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	5.3	5.4	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	5.4	5.5	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	5.5	5.6	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	5.6	5.7	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	5.7	5.8	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	5.8	5.9	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	5.9	6	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
E	6	6.1	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
E	6.1	6.2	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
E	6.2	6.3	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
E	6.3	6.4	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	6.4	6.5	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	6.5	6.6	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	6.6	6.7	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	6.7	6.8	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
E	6.8	6.9	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
E	6.9	7	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	7	7.1	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	7.1	7.2	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	7.2	7.3	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	7.3	7.4	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	7.4	7.5	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	7.5	7.6	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	7.6	7.7	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	7.7	7.8	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	7.8	7.9	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	7.9	8	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	8	8.1	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	8.1	8.2	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	8.2	8.3	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	8.3	8.4	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	8.4	8.5	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	8.5	8.6	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	8.6	8.7	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	8.7	8.8	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	8.8	8.9	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	8.9	9	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	9	9.1	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	9.1	9.2	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	9.2	9.3	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	9.3	9.4	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	9.4	9.5	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	9.5	9.6	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	9.6	9.7	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	9.7	9.8	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	9.8	9.9	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
E	9.9	10	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	10	10.1	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	10.1	10.2	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	10.2	10.3	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	10.3	10.4	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	10.4	10.5	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	10.5	10.6	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	10.6	10.7	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	10.7	10.8	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	10.8	10.9	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	10.9	11	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	11	11.1	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	11.1	11.2	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	11.2	11.3	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	0	0.1	2, 2A	39.8	39.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	0.1	0.2	2, 2A	39.9	40	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	0.2	0.3	2, 2A	40	40.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	0.3	0.4	2, 2A	40.1	40.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	0.4	0.5	2, 2A	40.2	40.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	0.5	0.6	2, 2A	40.3	40.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	0.6	0.7	2, 2A	40.4	40.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	0.7	0.8	2, 2A	40.5	40.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	0.8	0.9	2, 2A	40.6	40.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	0.9	1	2, 2A	40.7	40.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	1	1.1	2, 2A	40.8	40.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	1.1	1.2	2, 2A	40.9	41	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	1.2	1.3	2, 2A	41	41.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	1.3	1.4	2, 2A	41.1	41.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	1.4	1.5	2, 2A	41.2	41.3	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	1.5	1.6	2, 2A	41.3	41.4	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	1.6	1.7	2, 2A	41.4	41.5	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	1.7	1.8	2, 2A	41.5	41.6	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	1.8	1.9	2, 2A	41.6	41.7	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	1.9	2	2, 2A	41.7	41.8	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	2	2.1	2, 2A	41.8	41.9	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	2.1	2.2	2, 2A	41.9	42	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	2.2	2.3	2, 2A	42	42.1	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	2.3	2.4	2, 2A	42.1	42.2	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	2.4	2.5	2, 2A	42.2	42.3	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	2.5	2.6	2, 2A	42.3	42.4	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	2.6	2.7	2, 2A	42.4	42.5	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	2.7	2.8	2, 2A	42.5	42.6	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	2.8	2.9	2, 2A	42.6	42.7	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	2.9	3	2, 2A	42.7	42.8	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	3	3.1	2, 2A	42.8	42.9	0-10	1	Yes	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
G	3.1	3.2	2, 2A	42.9	43	0-10	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	3.2	3.3	2, 2A	43	43.1	0-10	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	3.3	3.4	2, 2A	43.1	43.2	0-10	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	3.4	3.5	2, 2A	43.2	43.3	0-10	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	3.5	3.6	2, 2A	43.3	43.4	0-10	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	3.6	3.7	2, 2A	43.4	43.5	0-10	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
G	3.7	3.8	2, 2A	43.5	43.6	0-10	2	Yes	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
D	42.5	42.6	1	77.5	77.6	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	42.6	42.7	1	77.6	77.7	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	42.7	42.8	1	77.7	77.8	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	42.8	42.9	1	77.8	77.9	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	42.9	43	1	77.9	78	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	Unknown	Unknown
D	43	43.1	1	78	78.1	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	43.1	43.2	1	78.1	78.2	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	43.2	43.3	1	78.2	78.3	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	WIFL,LBV,
D	43.3	43.4	1	78.3	78.4	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	CAGN,WIFL,LBV,
D	43.4	43.5	1	78.4	78.5	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	CAGN,
D	43.5	43.6	1	78.5	78.6	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	CAGN,
D	43.6	43.7	1	78.6	78.7	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	CAGN,
D	43.7	43.8	1	78.7	78.8	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	CAGN,WIFL,
D	43.8	43.9	1	78.8	78.9	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	CAGN,WIFL,
D	43.9	44	1	78.9	79	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	WIFL,
D	44	44.1	1	79	79.1	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	44.1	44.2	1	79.1	79.2	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	44.2	44.3	1	79.2	79.3	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	44.3	44.4	1	79.3	79.4	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	44.4	44.5	1	79.4	79.5	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	44.5	44.6	1	79.5	79.6	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	44.6	44.7	1	79.6	79.7	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	ARTO,WIFL,CRLF,LBV,
D	44.7	44.8	1	79.7	79.8	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	ARTO,WIFL,CRLF,LBV,
D	44.8	44.9	1	79.8	79.9	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	ARTO,CAGN,WIFL,CRLF,LBV,
D	44.9	45	1	79.9	80	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	45	45.1	1	80	80.1	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	45.1	45.2	1	80.1	80.2	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	45.2	45.3	1	80.2	80.3	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	45.3	45.4	1	80.3	80.4	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	BSS, CaHLk, CW	Unknown
D	45.4	45.5	1	80.4	80.5	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	BSS, CaHLk, CW	Unknown
D	45.5	45.6	1	80.5	80.6	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	BSS, CaHLk, CW	Unknown
D	45.6	45.7	1	80.6	80.7	>30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	BSS, CaHLk, CW	Unknown
D	45.7	45.8	1	80.7	80.8	>30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	Unknown	Unknown
D	45.8	45.9	1	80.8	80.9	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	Unknown	Unknown
D	45.9	46	1	80.9	81	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	46	46.1	1	81	81.1	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	46.1	46.2	1	81.1	81.2	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	46.2	46.3	1	81.2	81.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	46.3	46.4	1	81.3	81.4	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	46.4	46.5	1	81.4	81.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	46.5	46.6	1	81.5	81.6	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
D	46.6	46.7	1	81.6	81.7	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
D	46.7	46.8	1	81.7	81.8	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
D	46.8	46.9	1	81.8	81.9	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
D	46.9	47	1	81.9	82	>30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	ARTO,WIFL,CRLF,LBV,
D	47	47.1	1	82	82.1	>30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	ARTO,WIFL,CRLF,LBV,
D	47.1	47.2	1	82.1	82.2	>30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	47.2	47.3	1	82.2	82.3	>30	6	No	No	Double Circuit	7.79	10.12	1.37	1.76	M	Unknown	Unknown
D	47.3	47.4	1	82.3	82.4	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
D	47.4	47.5	1	82.4	82.5	>30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	47.5	47.6	1	82.5	82.6	>30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	47.6	47.7	1	82.6	82.7	>30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
D	47.7	47.8	1	82.7	82.8	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
D	47.8	47.9	1	82.8	82.9	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	WIFL,
D	47.9	48	1	82.9	83	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	WIFL,
D	48	48.1	1	83	83.1	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	ARTO,WIFL,
D	48.1	48.2	1	83.1	83.2	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	ARTO,WIFL,CRLF,LBV,
E	0	0.1	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	0.1	0.2	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	0.2	0.3	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	0.3	0.4	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	0.4	0.5	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	0.5	0.6	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	0.6	0.7	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
E	0.7	0.8	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
E	0.8	0.9	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
E	0.9	1	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	1	1.1	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	1.1	1.2	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
E	1.2	1.3	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
E	1.3	1.4	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
E	1.4	1.5	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
E	1.5	1.6	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
E	1.6	1.7	None			0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	KF,
E	1.7	1.8	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	1.8	1.9	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	1.9	2	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	2	2.1	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	2.1	2.2	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	2.2	2.3	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	2.3	2.4	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	2.4	2.5	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	2.5	2.6	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	2.6	2.7	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	2.7	2.8	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	2.8	2.9	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	2.9	3	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	3	3.1	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	3.1	3.2	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	3.2	3.3	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	3.3	3.4	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	3.4	3.5	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	3.5	3.6	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	3.6	3.7	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	3.7	3.8	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	3.8	3.9	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	3.9	4	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	4	4.1	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	4.1	4.2	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	4.2	4.3	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	4.3	4.4	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	4.4	4.5	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	4.5	4.6	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
E	4.6	4.7	None			0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
D	32.1	32.2	1	67.1	67.2	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	32.2	32.3	1	67.2	67.3	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	32.3	32.4	1	67.3	67.4	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	32.4	32.5	1	67.4	67.5	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	Unknown	Unknown
D	32.5	32.6	1	67.5	67.6	>30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	Unknown	Unknown
D	32.6	32.7	1	67.6	67.7	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	32.7	32.8	1	67.7	67.8	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	32.8	32.9	1	67.8	67.9	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	32.9	33	1	67.9	68	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	33	33.1	1	68	68.1	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	33.1	33.2	1	68.1	68.2	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	33.2	33.3	1	68.2	68.3	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	33.3	33.4	1	68.3	68.4	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	33.4	33.5	1	68.4	68.5	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	33.5	33.6	1	68.5	68.6	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	33.6	33.7	1	68.6	68.7	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	33.7	33.8	1	68.7	68.8	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	33.8	33.9	1	68.8	68.9	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	33.9	34	1	68.9	69	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	34	34.1	1	69	69.1	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	34.1	34.2	1	69.1	69.2	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	34.2	34.3	1	69.2	69.3	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	34.3	34.4	1	69.3	69.4	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	34.4	34.5	1	69.4	69.5	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	34.5	34.6	1	69.5	69.6	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	34.6	34.7	1	69.6	69.7	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
D	34.7	34.8	1	69.7	69.8	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	ARTO,WIFL,CRLF,LBV,
D	34.8	34.9	1	69.8	69.9	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	ARTO,WIFL,CRLF,LBV,
D	34.9	35	1	69.9	70	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	ARTO,WIFL,CRLF,LBV,
D	35	35.1	1	70	70.1	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	ARTO,WIFL,CRLF,LBV,
D	35.1	35.2	1	70.1	70.2	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	ARTO,WIFL,CRLF,LBV,
D	35.2	35.3	1	70.2	70.3	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	ARTO,WIFL,CRLF,LBV,
D	35.3	35.4	1	70.3	70.4	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	ARTO,WIFL,CRLF,LBV,
D	35.4	35.5	1	70.4	70.5	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	ARTO,WIFL,CRLF,LBV,
D	35.5	35.6	1	70.5	70.6	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	ARTO,WIFL,CRLF,LBV,
D	35.6	35.7	1	70.6	70.7	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	ARTO,WIFL,CRLF,LBV,
D	35.7	35.8	1	70.7	70.8	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	35.8	35.9	1	70.8	70.9	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	35.9	36	1	70.9	71	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	WIFL,LBV,
D	36	36.1	1	71	71.1	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	ARTO,WIFL,LBV,
D	36.1	36.2	1	71.1	71.2	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	ARTO,WIFL,LBV,
D	36.2	36.3	1	71.2	71.3	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	36.3	36.4	1	71.3	71.4	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
D	36.4	36.5	1	71.4	71.5	10-20	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
D	36.5	36.6	1	71.5	71.6	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
D	36.6	36.7	1	71.6	71.7	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
D	36.7	36.8	1	71.7	71.8	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
D	36.8	36.9	1	71.8	71.9	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
D	36.9	37	1	71.9	72	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
D	37	37.1	1	72	72.1	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
D	37.1	37.2	1	72.1	72.2	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
D	37.2	37.3	1	72.2	72.3	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown

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D	37.3	37.4	1	72.3	72.4	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	M	Unknown	Unknown
D	37.4	37.5	1	72.4	72.5	20-30	5	No	No	Double Circuit	3.14	4.3	0.95	1.34	M	Unknown	Unknown
D	37.5	37.6	1	72.5	72.6	>30	6	No	No	Double Circuit	7.79	10.12	1.37	1.76	M	Unknown	Unknown
D	37.6	37.7	1	72.6	72.7	20-30	5	No	No	Double Circuit	3.14	4.3	0.95	1.34	M	Unknown	Unknown
D	37.7	37.8	1	72.7	72.8	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
D	37.8	37.9	1	72.8	72.9	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
D	37.9	38	1	72.9	73	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
D	38	38.1	1	73	73.1	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
D	38.1	38.2	1	73.1	73.2	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
D	38.2	38.3	1	73.2	73.3	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	38.3	38.4	1	73.3	73.4	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	38.4	38.5	1	73.4	73.5	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	38.5	38.6	1	73.5	73.6	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	38.6	38.7	1	73.6	73.7	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	38.7	38.8	1	73.7	73.8	>30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	38.8	38.9	1	73.8	73.9	>30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	38.9	39	1	73.9	74	>30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	39	39.1	1	74	74.1	>30	6	No	No	Double Circuit	7.79	10.12	1.37	1.76	M	Unknown	Unknown
D	39.1	39.2	1	74.1	74.2	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
D	39.2	39.3	1	74.2	74.3	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
D	39.3	39.4	1	74.3	74.4	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
D	39.4	39.5	1	74.4	74.5	20-30	5	No	No	Double Circuit	3.14	4.3	0.95	1.34	M	Unknown	Unknown
D	39.5	39.6	1	74.5	74.6	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
D	39.6	39.7	1	74.6	74.7	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
D	39.7	39.8	1	74.7	74.8	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
D	39.8	39.9	1	74.8	74.9	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	39.9	40	1	74.9	75	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	40	40.1	1	75	75.1	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	40.1	40.2	1	75.1	75.2	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	40.2	40.3	1	75.2	75.3	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	40.3	40.4	1	75.3	75.4	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	40.4	40.5	1	75.4	75.5	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	40.5	40.6	1	75.5	75.6	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
D	40.6	40.7	1	75.6	75.7	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
D	40.7	40.8	1	75.7	75.8	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
D	40.8	40.9	1	75.8	75.9	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	40.9	41	1	75.9	76	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	41	41.1	1	76	76.1	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	41.1	41.2	1	76.1	76.2	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	41.2	41.3	1	76.2	76.3	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	41.3	41.4	1	76.3	76.4	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	41.4	41.5	1	76.4	76.5	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	41.5	41.6	1	76.5	76.6	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	CACO	Unknown
D	41.6	41.7	1	76.6	76.7	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	41.7	41.8	1	76.7	76.8	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	41.8	41.9	1	76.8	76.9	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	41.9	42	1	76.9	77	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	42	42.1	1	77	77.1	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	42.1	42.2	1	77.1	77.2	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	42.2	42.3	1	77.2	77.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	42.3	42.4	1	77.3	77.4	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	42.4	42.5	1	77.4	77.5	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown

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D	21.7	21.8	1	56.7	56.8	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	21.8	21.9	1	56.8	56.9	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	21.9	22	1	56.9	57	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	22	22.1	1	57	57.1	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	22.1	22.2	1	57.1	57.2	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	22.2	22.3	1	57.2	57.3	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	22.3	22.4	1	57.3	57.4	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	22.4	22.5	1	57.4	57.5	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	22.5	22.6	1	57.5	57.6	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	22.6	22.7	1	57.6	57.7	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	22.7	22.8	1	57.7	57.8	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	22.8	22.9	1	57.8	57.9	>30	6	No	No	Double Circuit	7.79	10.12	1.37	1.76	L	Unknown	Unknown
D	22.9	23	1	57.9	58	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	23	23.1	1	58	58.1	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	23.1	23.2	1	58.1	58.2	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	CACO	Unknown
D	23.2	23.3	1	58.2	58.3	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	CACO	Unknown
D	23.3	23.4	1	58.3	58.4	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	23.4	23.5	1	58.4	58.5	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	23.5	23.6	1	58.5	58.6	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	ARTO,WIFL,CRLF,
D	23.6	23.7	1	58.6	58.7	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	ARTO,WIFL,CRLF,
D	23.7	23.8	1	58.7	58.8	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	23.8	23.9	1	58.8	58.9	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	ARTO,WIFL,CRLF,
D	23.9	24	1	58.9	59	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	ARTO,WIFL,CRLF,
D	24	24.1	1	59	59.1	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	ARTO,WIFL,CRLF,
D	24.1	24.2	1	59.1	59.2	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	ARTO,WIFL,CRLF,
D	24.2	24.3	1	59.2	59.3	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	ARTO,WIFL,CRLF,
D	24.3	24.4	1	59.3	59.4	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	WIFL,
D	24.4	24.5	1	59.4	59.5	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	WIFL,
D	24.5	24.6	1	59.5	59.6	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	WIFL,
D	24.6	24.7	1	59.6	59.7	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	ARTO,WIFL,CRLF,
D	24.7	24.8	1	59.7	59.8	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	ARTO,WIFL,CRLF,
D	24.8	24.9	1	59.8	59.9	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	24.9	25	1	59.9	60	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	25	25.1	1	60	60.1	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	25.1	25.2	1	60.1	60.2	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	25.2	25.3	1	60.2	60.3	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	25.3	25.4	1	60.3	60.4	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	25.4	25.5	1	60.4	60.5	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	25.5	25.6	1	60.5	60.6	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	25.6	25.7	1	60.6	60.7	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	25.7	25.8	1	60.7	60.8	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	25.8	25.9	1	60.8	60.9	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	25.9	26	1	60.9	61	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	26	26.1	1	61	61.1	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	26.1	26.2	1	61.1	61.2	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	26.2	26.3	1	61.2	61.3	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	26.3	26.4	1	61.3	61.4	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	26.4	26.5	1	61.4	61.5	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	26.5	26.6	1	61.5	61.6	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	26.6	26.7	1	61.6	61.7	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	ARTO,WIFL,CRLF,
D	26.7	26.8	1	61.7	61.8	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	ARTO,WIFL,CRLF,
D	26.8	26.9	1	61.8	61.9	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	ARTO,WIFL,CRLF,

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
D	26.9	27	1	61.9	62	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	ARTO,WIFL,CRLF,
D	27	27.1	1	62	62.1	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	WIFL,
D	27.1	27.2	1	62.1	62.2	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	27.2	27.3	1	62.2	62.3	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	27.3	27.4	1	62.3	62.4	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	27.4	27.5	1	62.4	62.5	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	27.5	27.6	1	62.5	62.6	>30	6	No	No	Double Circuit	7.79	10.12	1.37	1.76	G	Unknown	Unknown
D	27.6	27.7	1	62.6	62.7	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	Unknown	Unknown
D	27.7	27.8	1	62.7	62.8	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	Unknown	Unknown
D	27.8	27.9	1	62.8	62.9	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	Unknown	Unknown
D	27.9	28	1	62.9	63	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	28	28.1	1	63	63.1	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	28.1	28.2	1	63.1	63.2	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	28.2	28.3	1	63.2	63.3	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	28.3	28.4	1	63.3	63.4	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	28.4	28.5	1	63.4	63.5	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	28.5	28.6	1	63.5	63.6	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	28.6	28.7	1	63.6	63.7	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	28.7	28.8	1	63.7	63.8	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	28.8	28.9	1	63.8	63.9	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	28.9	29	1	63.9	64	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	29	29.1	1	64	64.1	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	29.1	29.2	1	64.1	64.2	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	29.2	29.3	1	64.2	64.3	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	Unknown	Unknown
D	29.3	29.4	1	64.3	64.4	>30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	Unknown	Unknown
D	29.4	29.5	1	64.4	64.5	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	G	Unknown	Unknown
D	29.5	29.6	1	64.5	64.6	>30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	Unknown	Unknown
D	29.6	29.7	1	64.6	64.7	>30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	Unknown	Unknown
D	29.7	29.8	1	64.7	64.8	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	29.8	29.9	1	64.8	64.9	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	29.9	30	1	64.9	65	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	30	30.1	1	65	65.1	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	30.1	30.2	1	65.1	65.2	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	30.2	30.3	1	65.2	65.3	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	CACO	Unknown
D	30.3	30.4	1	65.3	65.4	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	30.4	30.5	1	65.4	65.5	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	30.5	30.6	1	65.5	65.6	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	30.6	30.7	1	65.6	65.7	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	30.7	30.8	1	65.7	65.8	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	30.8	30.9	1	65.8	65.9	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	30.9	31	1	65.9	66	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	31	31.1	1	66	66.1	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	31.1	31.2	1	66.1	66.2	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	31.2	31.3	1	66.2	66.3	>30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	Unknown	Unknown
D	31.3	31.4	1	66.3	66.4	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	Unknown	Unknown
D	31.4	31.5	1	66.4	66.5	>30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	G	Unknown	Unknown
D	31.5	31.6	1	66.5	66.6	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	31.6	31.7	1	66.6	66.7	20-30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	31.7	31.8	1	66.7	66.8	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	31.8	31.9	1	66.8	66.9	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	31.9	32	1	66.9	67	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown
D	32	32.1	1	67	67.1	>30	H	Yes	Yes	Double Circuit	0.52	0.61	0.09	0.15	G	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
D	11.3	11.4	1	46.3	46.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	11.4	11.5	1	46.4	46.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	11.5	11.6	1	46.5	46.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	11.6	11.7	1	46.6	46.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	11.7	11.8	1	46.7	46.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	11.8	11.9	1	46.8	46.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	11.9	12	1	46.9	47	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	12	12.1	1	47	47.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	12.1	12.2	1	47.1	47.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	12.2	12.3	1	47.2	47.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	12.3	12.4	1	47.3	47.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	12.4	12.5	1	47.4	47.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	12.5	12.6	1	47.5	47.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	12.6	12.7	1	47.6	47.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	12.7	12.8	1	47.7	47.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	12.8	12.9	1	47.8	47.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	12.9	13	1	47.9	48	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	13	13.1	1	48	48.1	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	13.1	13.2	1	48.1	48.2	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	13.2	13.3	1	48.2	48.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	13.3	13.4	1	48.3	48.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	13.4	13.5	1	48.4	48.5	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	13.5	13.6	1	48.5	48.6	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	13.6	13.7	1	48.6	48.7	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	13.7	13.8	1	48.7	48.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	13.8	13.9	1	48.8	48.9	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
D	13.9	14	1	48.9	49	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
D	14	14.1	1	49	49.1	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
D	14.1	14.2	1	49.1	49.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	14.2	14.3	1	49.2	49.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	14.3	14.4	1	49.3	49.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	14.4	14.5	1	49.4	49.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	14.5	14.6	1	49.5	49.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	14.6	14.7	1	49.6	49.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	14.7	14.8	1	49.7	49.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	14.8	14.9	1	49.8	49.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	14.9	15	1	49.9	50	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	15	15.1	1	50	50.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	15.1	15.2	1	50.1	50.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	15.2	15.3	1	50.2	50.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	15.3	15.4	1	50.3	50.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	15.4	15.5	1	50.4	50.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	15.5	15.6	1	50.5	50.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	15.6	15.7	1	50.6	50.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	15.7	15.8	1	50.7	50.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	CACO	Unknown
D	15.8	15.9	1	50.8	50.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	15.9	16	1	50.9	51	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	16	16.1	1	51	51.1	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	16.1	16.2	1	51.1	51.2	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	16.2	16.3	1	51.2	51.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	16.3	16.4	1	51.3	51.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	16.4	16.5	1	51.4	51.5	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown

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D	16.5	16.6	1	51.5	51.6	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	16.6	16.7	1	51.6	51.7	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	16.7	16.8	1	51.7	51.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	16.8	16.9	1	51.8	51.9	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	16.9	17	1	51.9	52	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	17	17.1	1	52	52.1	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	17.1	17.2	1	52.1	52.2	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	17.2	17.3	1	52.2	52.3	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	17.3	17.4	1	52.3	52.4	10-20	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	17.4	17.5	1	52.4	52.5	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	17.5	17.6	1	52.5	52.6	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	17.6	17.7	1	52.6	52.7	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	17.7	17.8	1	52.7	52.8	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	17.8	17.9	1	52.8	52.9	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	17.9	18	1	52.9	53	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	18	18.1	1	53	53.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	18.1	18.2	1	53.1	53.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	18.2	18.3	1	53.2	53.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	18.3	18.4	1	53.3	53.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	18.4	18.5	1	53.4	53.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	18.5	18.6	1	53.5	53.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	18.6	18.7	1	53.6	53.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	18.7	18.8	1	53.7	53.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	18.8	18.9	1	53.8	53.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	18.9	19	1	53.9	54	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	19	19.1	1	54	54.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	19.1	19.2	1	54.1	54.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	19.2	19.3	1	54.2	54.3	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	19.3	19.4	1	54.3	54.4	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	19.4	19.5	1	54.4	54.5	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	19.5	19.6	1	54.5	54.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	19.6	19.7	1	54.6	54.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	19.7	19.8	1	54.7	54.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	19.8	19.9	1	54.8	54.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	19.9	20	1	54.9	55	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	20	20.1	1	55	55.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	20.1	20.2	1	55.1	55.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	20.2	20.3	1	55.2	55.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	20.3	20.4	1	55.3	55.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	20.4	20.5	1	55.4	55.5	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	20.5	20.6	1	55.5	55.6	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	20.6	20.7	1	55.6	55.7	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	20.7	20.8	1	55.7	55.8	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	20.8	20.9	1	55.8	55.9	20-30	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	20.9	21	1	55.9	56	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	21	21.1	1	56	56.1	20-30	5	No	No	Double Circuit	3.14	4.3	0.95	1.34	L	Unknown	Unknown
D	21.1	21.2	1	56.1	56.2	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	21.2	21.3	1	56.2	56.3	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	21.3	21.4	1	56.3	56.4	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	21.4	21.5	1	56.4	56.5	20-30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	21.5	21.6	1	56.5	56.6	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	21.6	21.7	1	56.6	56.7	>30	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
D	0.9	1	1	35.9	36	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	1	1.1	1	36	36.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	1.1	1.2	1	36.1	36.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	1.2	1.3	1	36.2	36.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	1.3	1.4	1	36.3	36.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	1.4	1.5	1	36.4	36.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	1.5	1.6	1	36.5	36.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	1.6	1.7	1	36.6	36.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	1.7	1.8	1	36.7	36.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	1.8	1.9	1	36.8	36.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	1.9	2	1	36.9	37	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	2	2.1	1	37	37.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	2.1	2.2	1	37.1	37.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	2.2	2.3	1	37.2	37.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	2.3	2.4	1	37.3	37.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	2.4	2.5	1	37.4	37.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	2.5	2.6	1	37.5	37.6	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
D	2.6	2.7	1	37.6	37.7	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
D	2.7	2.8	1	37.7	37.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	2.8	2.9	1	37.8	37.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	2.9	3	1	37.9	38	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	3	3.1	1	38	38.1	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
D	3.1	3.2	1	38.1	38.2	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
D	3.2	3.3	1	38.2	38.3	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
D	3.3	3.4	1	38.3	38.4	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
D	3.4	3.5	1	38.4	38.5	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
D	3.5	3.6	1	38.5	38.6	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
D	3.6	3.7	1	38.6	38.7	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
D	3.7	3.8	1	38.7	38.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	3.8	3.9	1	38.8	38.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	3.9	4	1	38.9	39	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	4	4.1	1	39	39.1	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	4.1	4.2	1	39.1	39.2	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	4.2	4.3	1	39.2	39.3	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
D	4.3	4.4	1	39.3	39.4	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
D	4.4	4.5	1	39.4	39.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	4.5	4.6	1	39.5	39.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	4.6	4.7	1	39.6	39.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	4.7	4.8	1	39.7	39.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	4.8	4.9	1	39.8	39.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	4.9	5	1	39.9	40	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	5	5.1	1	40	40.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	5.1	5.2	1	40.1	40.2	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
D	5.2	5.3	1	40.2	40.3	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
D	5.3	5.4	1	40.3	40.4	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
D	5.4	5.5	1	40.4	40.5	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	5.5	5.6	1	40.5	40.6	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	5.6	5.7	1	40.6	40.7	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	5.7	5.8	1	40.7	40.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	5.8	5.9	1	40.8	40.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	5.9	6	1	40.9	41	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	6	6.1	1	41	41.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
D	6.1	6.2	1	41.1	41.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	6.2	6.3	1	41.2	41.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	6.3	6.4	1	41.3	41.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	6.4	6.5	1	41.4	41.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	6.5	6.6	1	41.5	41.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	6.6	6.7	1	41.6	41.7	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	6.7	6.8	1	41.7	41.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	6.8	6.9	1	41.8	41.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	6.9	7	1	41.9	42	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	7	7.1	1	42	42.1	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	7.1	7.2	1	42.1	42.2	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	7.2	7.3	1	42.2	42.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	7.3	7.4	1	42.3	42.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	7.4	7.5	1	42.4	42.5	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	AMBA	Unknown
D	7.5	7.6	1	42.5	42.6	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	AMBA	Unknown
D	7.6	7.7	1	42.6	42.7	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	AMBA	Unknown
D	7.7	7.8	1	42.7	42.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	AMBA	Unknown
D	7.8	7.9	1	42.8	42.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	AMBA	Unknown
D	7.9	8	1	42.9	43	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	AMBA	Unknown
D	8	8.1	1	43	43.1	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	AMBA	Unknown
D	8.1	8.2	1	43.1	43.2	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	AMBA	Unknown
D	8.2	8.3	1	43.2	43.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	AMBA	Unknown
D	8.3	8.4	1	43.3	43.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	AMBA	Unknown
D	8.4	8.5	1	43.4	43.5	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	AMBA	Unknown
D	8.5	8.6	1	43.5	43.6	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	AMBA	Unknown
D	8.6	8.7	1	43.6	43.7	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	AMBA	Unknown
D	8.7	8.8	1	43.7	43.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	AMBA	Unknown
D	8.8	8.9	1	43.8	43.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	AMBA	Unknown
D	8.9	9	1	43.9	44	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	AMBA	Unknown
D	9	9.1	1	44	44.1	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	AMBA	Unknown
D	9.1	9.2	1	44.1	44.2	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	AMBA	Unknown
D	9.2	9.3	1	44.2	44.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	AMBA	Unknown
D	9.3	9.4	1	44.3	44.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	AMBA	Unknown
D	9.4	9.5	1	44.4	44.5	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	AMBA	Unknown
D	9.5	9.6	1	44.5	44.6	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	AMBA	Unknown
D	9.6	9.7	1	44.6	44.7	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	AMBA	Unknown
D	9.7	9.8	1	44.7	44.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	AMBA	Unknown
D	9.8	9.9	1	44.8	44.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	AMBA	Unknown
D	9.9	10	1	44.9	45	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	AMBA	Unknown
D	10	10.1	1	45	45.1	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	10.1	10.2	1	45.1	45.2	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	10.2	10.3	1	45.2	45.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	10.3	10.4	1	45.3	45.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	10.4	10.5	1	45.4	45.5	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	10.5	10.6	1	45.5	45.6	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	10.6	10.7	1	45.6	45.7	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	10.7	10.8	1	45.7	45.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	10.8	10.9	1	45.8	45.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	10.9	11	1	45.9	46	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
D	11	11.1	1	46	46.1	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
D	11.1	11.2	1	46.1	46.2	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
D	11.2	11.3	1	46.2	46.3	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
C	12.2	12.3	1	25.5	25.6	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	12.3	12.4	1	25.6	25.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
C	12.4	12.5	1	25.7	25.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
C	12.5	12.6	1	25.8	25.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
C	12.6	12.7	1	25.9	26	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	M	Unknown	Unknown
C	12.7	12.8	1	26	26.1	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	M	Unknown	Unknown
C	12.8	12.9	1	26.1	26.2	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	M	Unknown	Unknown
C	12.9	13	1	26.2	26.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	13	13.1	1	26.3	26.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	13.1	13.2	1	26.4	26.5	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	13.2	13.3	1	26.5	26.6	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	M	Unknown	Unknown
C	13.3	13.4	1	26.6	26.7	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	13.4	13.5	1	26.7	26.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	13.5	13.6	1	26.8	26.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	13.6	13.7	1	26.9	27	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	13.7	13.8	1	27	27.1	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	13.8	13.9	1	27.1	27.2	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	13.9	14	1	27.2	27.3	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	M	Unknown	KF,
C	14	14.1	1	27.3	27.4	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	M	Unknown	Unknown
C	14.1	14.2	1	27.4	27.5	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	M	Unknown	Unknown
C	14.2	14.3	1	27.5	27.6	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	14.3	14.4	1	27.6	27.7	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	14.4	14.5	1	27.7	27.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	14.5	14.6	1	27.8	27.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	14.6	14.7	1	27.9	28	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	14.7	14.8	1	28	28.1	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	14.8	14.9	1	28.1	28.2	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	14.9	15	1	28.2	28.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	15	15.1	1	28.3	28.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	15.1	15.2	1	28.4	28.5	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	15.2	15.3	1	28.5	28.6	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	15.3	15.4	1	28.6	28.7	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	15.4	15.5	1	28.7	28.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	15.5	15.6	1	28.8	28.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	15.6	15.7	1	28.9	29	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	15.7	15.8	1	29	29.1	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	15.8	15.9	1	29.1	29.2	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	15.9	16	1	29.2	29.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	16	16.1	1	29.3	29.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	16.1	16.2	1	29.4	29.5	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	16.2	16.3	1	29.5	29.6	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	16.3	16.4	1	29.6	29.7	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	16.4	16.5	1	29.7	29.8	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	16.5	16.6	1	29.8	29.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	16.6	16.7	1	29.9	30	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	16.7	16.8	1	30	30.1	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	16.8	16.9	1	30.1	30.2	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	16.9	17	1	30.2	30.3	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	17	17.1	1	30.3	30.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	17.1	17.2	1	30.4	30.5	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	17.2	17.3	1	30.5	30.6	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	17.3	17.4	1	30.6	30.7	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
C	17.4	17.5	1	30.7	30.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	17.5	17.6	1	30.8	30.9	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	17.6	17.7	1	30.9	31	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	17.7	17.8	1	31	31.1	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	17.8	17.9	1	31.1	31.2	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	17.9	18	1	31.2	31.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	18	18.1	1	31.3	31.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	18.1	18.2	1	31.4	31.5	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	18.2	18.3	1	31.5	31.6	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	18.3	18.4	1	31.6	31.7	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	18.4	18.5	1	31.7	31.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	18.5	18.6	1	31.8	31.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	18.6	18.7	1	31.9	32	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	18.7	18.8	1	32	32.1	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	18.8	18.9	1	32.1	32.2	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	18.9	19	1	32.2	32.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	19	19.1	1	32.3	32.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	19.1	19.2	1	32.4	32.5	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	19.2	19.3	1	32.5	32.6	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	19.3	19.4	1	32.6	32.7	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	19.4	19.5	1	32.7	32.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	19.5	19.6	1	32.8	32.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
C	19.6	19.7	1	32.9	33	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
C	19.7	19.8	1	33	33.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
C	19.8	19.9	1	33.1	33.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
C	19.9	20	1	33.2	33.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	20	20.1	1	33.3	33.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	20.1	20.2	1	33.4	33.5	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	20.2	20.3	1	33.5	33.6	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	20.3	20.4	1	33.6	33.7	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	20.4	20.5	1	33.7	33.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	20.5	20.6	1	33.8	33.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	20.6	20.7	1	33.9	34	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	20.7	20.8	1	34	34.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
C	20.8	20.9	1	34.1	34.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
C	20.9	21	1	34.2	34.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
C	21	21.1	1	34.3	34.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
C	21.1	21.2	1	34.4	34.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
C	21.2	21.3	1	34.5	34.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
C	21.3	21.4	1	34.6	34.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
C	21.4	21.5	1	34.7	34.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
C	21.5	21.6	1	34.8	34.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
C	21.6	21.7	1	34.9	35	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
D	0	0.1	1	35	35.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	0.1	0.2	1	35.1	35.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	0.2	0.3	1	35.2	35.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	0.3	0.4	1	35.3	35.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	0.4	0.5	1	35.4	35.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	0.5	0.6	1	35.5	35.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	0.6	0.7	1	35.6	35.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	0.7	0.8	1	35.7	35.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
D	0.8	0.9	1	35.8	35.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
C	1.8	1.9	1	15.1	15.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
C	1.9	2	1	15.2	15.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	2	2.1	1	15.3	15.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	2.1	2.2	1	15.4	15.5	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	2.2	2.3	1	15.5	15.6	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	M	Unknown	Unknown
C	2.3	2.4	1	15.6	15.7	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	2.4	2.5	1	15.7	15.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	2.5	2.6	1	15.8	15.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	2.6	2.7	1	15.9	16	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	M	Unknown	Unknown
C	2.7	2.8	1	16	16.1	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	M	Unknown	Unknown
C	2.8	2.9	1	16.1	16.2	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	M	Unknown	Unknown
C	2.9	3	1	16.2	16.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	3	3.1	1	16.3	16.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	3.1	3.2	1	16.4	16.5	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	3.2	3.3	1	16.5	16.6	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	3.3	3.4	1	16.6	16.7	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	3.4	3.5	1	16.7	16.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	3.5	3.6	1	16.8	16.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	3.6	3.7	1	16.9	17	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	3.7	3.8	1	17	17.1	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	3.8	3.9	1	17.1	17.2	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	3.9	4	1	17.2	17.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	4	4.1	1	17.3	17.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
C	4.1	4.2	1	17.4	17.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
C	4.2	4.3	1	17.5	17.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
C	4.3	4.4	1	17.6	17.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
C	4.4	4.5	1	17.7	17.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	4.5	4.6	1	17.8	17.9	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	4.6	4.7	1	17.9	18	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	4.7	4.8	1	18	18.1	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	4.8	4.9	1	18.1	18.2	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	4.9	5	1	18.2	18.3	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	5	5.1	1	18.3	18.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
C	5.1	5.2	1	18.4	18.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
C	5.2	5.3	1	18.5	18.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
C	5.3	5.4	1	18.6	18.7	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	5.4	5.5	1	18.7	18.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	5.5	5.6	1	18.8	18.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	5.6	5.7	1	18.9	19	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	5.7	5.8	1	19	19.1	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	5.8	5.9	1	19.1	19.2	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	5.9	6	1	19.2	19.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	6	6.1	1	19.3	19.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	6.1	6.2	1	19.4	19.5	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	6.2	6.3	1	19.5	19.6	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	6.3	6.4	1	19.6	19.7	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	6.4	6.5	1	19.7	19.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	6.5	6.6	1	19.8	19.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	6.6	6.7	1	19.9	20	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	6.7	6.8	1	20	20.1	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	6.8	6.9	1	20.1	20.2	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	6.9	7	1	20.2	20.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
C	7	7.1	1	20.3	20.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	7.1	7.2	1	20.4	20.5	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	7.2	7.3	1	20.5	20.6	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	7.3	7.4	1	20.6	20.7	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	7.4	7.5	1	20.7	20.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	7.5	7.6	1	20.8	20.9	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	7.6	7.7	1	20.9	21	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	7.7	7.8	1	21	21.1	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	7.8	7.9	1	21.1	21.2	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	7.9	8	1	21.2	21.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	8	8.1	1	21.3	21.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	8.1	8.2	1	21.4	21.5	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	8.2	8.3	1	21.5	21.6	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	8.3	8.4	1	21.6	21.7	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	8.4	8.5	1	21.7	21.8	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	8.5	8.6	1	21.8	21.9	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	8.6	8.7	1	21.9	22	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	8.7	8.8	1	22	22.1	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	8.8	8.9	1	22.1	22.2	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	8.9	9	1	22.2	22.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	9	9.1	1	22.3	22.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	9.1	9.2	1	22.4	22.5	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	9.2	9.3	1	22.5	22.6	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	9.3	9.4	1	22.6	22.7	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	9.4	9.5	1	22.7	22.8	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	L	Unknown	Unknown
C	9.5	9.6	1	22.8	22.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	9.6	9.7	1	22.9	23	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	9.7	9.8	1	23	23.1	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	9.8	9.9	1	23.1	23.2	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	9.9	10	1	23.2	23.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	L	Unknown	Unknown
C	10	10.1	1	23.3	23.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	10.1	10.2	1	23.4	23.5	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	M	Unknown	Unknown
C	10.2	10.3	1	23.5	23.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
C	10.3	10.4	1	23.6	23.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
C	10.4	10.5	1	23.7	23.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
C	10.5	10.6	1	23.8	23.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	10.6	10.7	1	23.9	24	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	10.7	10.8	1	24	24.1	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	10.8	10.9	1	24.1	24.2	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	10.9	11	1	24.2	24.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	11	11.1	1	24.3	24.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	11.1	11.2	1	24.4	24.5	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	11.2	11.3	1	24.5	24.6	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	11.3	11.4	1	24.6	24.7	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	11.4	11.5	1	24.7	24.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	11.5	11.6	1	24.8	24.9	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	M	Unknown	Unknown
C	11.6	11.7	1	24.9	25	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	M	Unknown	Unknown
C	11.7	11.8	1	25	25.1	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	11.8	11.9	1	25.1	25.2	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	11.9	12	1	25.2	25.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	12	12.1	1	25.3	25.4	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	12.1	12.2	1	25.4	25.5	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
B	17.9	18	2, 2A, 3	31.2	31.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	18	18.1	2, 2A, 3	31.3	31.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	18.1	18.2	2, 2A, 3	31.4	31.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	18.2	18.3	2, 2A, 3	31.5	31.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	18.3	18.4	2, 2A, 3	31.6	31.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	18.4	18.5	2, 2A, 3	31.7	31.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	18.5	18.6	2, 2A, 3	31.8	31.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	18.6	18.7	2, 2A, 3	31.9	32	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	18.7	18.8	2, 2A, 3	32	32.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	18.8	18.9	2, 2A, 3	32.1	32.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	18.9	19	2, 2A, 3	32.2	32.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	19	19.1	2, 2A, 3	32.3	32.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	19.1	19.2	2, 2A, 3	32.4	32.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	19.2	19.3	2, 2A, 3	32.5	32.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	19.3	19.4	2, 2A, 3	32.6	32.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	19.4	19.5	2, 2A, 3	32.7	32.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	19.5	19.6	2, 2A, 3	32.8	32.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	19.6	19.7	2, 2A, 3	32.9	33	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	19.7	19.8	2, 2A, 3	33	33.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	19.8	19.9	2, 2A, 3	33.1	33.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	19.9	20	2, 2A, 3	33.2	33.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	20	20.1	2, 2A, 3	33.3	33.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	20.1	20.2	2, 2A, 3	33.4	33.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	20.2	20.3	2, 2A, 3	33.5	33.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	20.3	20.4	2, 2A, 3	33.6	33.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	20.4	20.5	2, 2A, 3	33.7	33.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	20.5	20.6	2, 2A, 3	33.8	33.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	20.6	20.7	2, 2A, 3	33.9	34	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	20.7	20.8	2, 2A, 3	34	34.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	20.8	20.9	2, 2A, 3	34.1	34.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	20.9	21	2, 2A, 3	34.2	34.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	21	21.1	2, 2A, 3	34.3	34.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	21.1	21.2	2, 2A, 3	34.4	34.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	21.2	21.3	2, 2A, 3	34.5	34.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	21.3	21.4	2, 2A, 3	34.6	34.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	21.4	21.5	2, 2A, 3	34.7	34.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	21.5	21.6	2, 2A, 3	34.8	34.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	21.6	21.7	2, 2A, 3	34.9	35	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	21.7	21.8	2, 2A, 3	35	35.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	21.8	21.9	2, 2A, 3	35.1	35.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	21.9	22	2, 2A, 3	35.2	35.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	22	22.1	2, 2A, 3	35.3	35.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	22.1	22.2	2, 2A, 3	35.4	35.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	22.2	22.3	2, 2A, 3	35.5	35.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	22.3	22.4	2, 2A, 3	35.6	35.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	22.4	22.5	2, 2A, 3	35.7	35.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	22.5	22.6	2, 2A, 3	35.8	35.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	22.6	22.7	2, 2A, 3	35.9	36	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	22.7	22.8	2, 2A, 3	36	36.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	22.8	22.9	2, 2A, 3	36.1	36.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	22.9	23	2, 2A, 3	36.2	36.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	23	23.1	2, 2A, 3	36.3	36.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
B	23.1	23.2	2, 2A, 3	36.4	36.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	23.2	23.3	2, 2A, 3	36.5	36.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	23.3	23.4	2, 2A, 3	36.6	36.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	23.4	23.5	2, 2A, 3	36.7	36.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	23.5	23.6	2, 2A, 3	36.8	36.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	23.6	23.7	2, 2A, 3	36.9	37	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	23.7	23.8	2, 2A, 3	37	37.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	23.8	23.9	2, 2A, 3	37.1	37.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	23.9	24	2, 2A, 3	37.2	37.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	24	24.1	2, 2A, 3	37.3	37.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	24.1	24.2	2, 2A, 3	37.4	37.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	24.2	24.3	2, 2A, 3	37.5	37.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	24.3	24.4	2, 2A, 3	37.6	37.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	24.4	24.5	2, 2A, 3	37.7	37.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	24.5	24.6	2, 2A, 3	37.8	37.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	24.6	24.7	2, 2A, 3	37.9	38	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	24.7	24.8	2, 2A, 3	38	38.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	24.8	24.9	2, 2A, 3	38.1	38.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	24.9	25	2, 2A, 3	38.2	38.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	25	25.1	2, 2A, 3	38.3	38.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	25.1	25.2	2, 2A, 3	38.4	38.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	25.2	25.3	2, 2A, 3	38.5	38.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	25.3	25.4	2, 2A, 3	38.6	38.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	25.4	25.5	2, 2A, 3	38.7	38.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	25.5	25.6	2, 2A, 3	38.8	38.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	25.6	25.7	2, 2A, 3	38.9	39	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	25.7	25.8	2, 2A, 3	39	39.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	25.8	25.9	2, 2A, 3	39.1	39.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	25.9	26	2, 2A, 3	39.2	39.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	26	26.1	2, 2A, 3	39.3	39.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	26.1	26.2	2, 2A, 3	39.4	39.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	26.2	26.3	2, 2A, 3	39.5	39.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	26.3	26.4	2, 2A, 3	39.6	39.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	26.4	26.5	2, 2A, 3	39.7	39.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
C	0	0.1	1	13.3	13.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
C	0.1	0.2	1	13.4	13.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
C	0.2	0.3	1	13.5	13.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
C	0.3	0.4	1	13.6	13.7	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	0.4	0.5	1	13.7	13.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	0.5	0.6	1	13.8	13.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	0.6	0.7	1	13.9	14	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	0.7	0.8	1	14	14.1	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	0.8	0.9	1	14.1	14.2	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	0.9	1	1	14.2	14.3	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	1	1.1	1	14.3	14.4	0-10	3	No	No	Double Circuit	0.65	0.65	0.27	0.56	M	Unknown	Unknown
C	1.1	1.2	1	14.4	14.5	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	1.2	1.3	1	14.5	14.6	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	1.3	1.4	1	14.6	14.7	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	1.4	1.5	1	14.7	14.8	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	1.5	1.6	1	14.8	14.9	0-10	2	No	No	Double Circuit	0.65	0.65	0.17	0.32	M	Unknown	Unknown
C	1.6	1.7	1	14.9	15	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
C	1.7	1.8	1	15	15.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
B	7.5	7.6	2, 2A, 3	20.8	20.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	7.6	7.7	2, 2A, 3	20.9	21	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	7.7	7.8	2, 2A, 3	21	21.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	7.8	7.9	2, 2A, 3	21.1	21.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	7.9	8	2, 2A, 3	21.2	21.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	8	8.1	2, 2A, 3	21.3	21.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	8.1	8.2	2, 2A, 3	21.4	21.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	KF,
B	8.2	8.3	2, 2A, 3	21.5	21.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	8.3	8.4	2, 2A, 3	21.6	21.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	8.4	8.5	2, 2A, 3	21.7	21.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	8.5	8.6	2, 2A, 3	21.8	21.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	8.6	8.7	2, 2A, 3	21.9	22	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	8.7	8.8	2, 2A, 3	22	22.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	8.8	8.9	2, 2A, 3	22.1	22.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	KF,
B	8.9	9	2, 2A, 3	22.2	22.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	9	9.1	2, 2A, 3	22.3	22.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	9.1	9.2	2, 2A, 3	22.4	22.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	9.2	9.3	2, 2A, 3	22.5	22.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	9.3	9.4	2, 2A, 3	22.6	22.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	9.4	9.5	2, 2A, 3	22.7	22.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	9.5	9.6	2, 2A, 3	22.8	22.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	9.6	9.7	2, 2A, 3	22.9	23	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	9.7	9.8	2, 2A, 3	23	23.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	9.8	9.9	2, 2A, 3	23.1	23.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	9.9	10	2, 2A, 3	23.2	23.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	10	10.1	2, 2A, 3	23.3	23.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	10.1	10.2	2, 2A, 3	23.4	23.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	10.2	10.3	2, 2A, 3	23.5	23.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	10.3	10.4	2, 2A, 3	23.6	23.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	10.4	10.5	2, 2A, 3	23.7	23.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	10.5	10.6	2, 2A, 3	23.8	23.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	10.6	10.7	2, 2A, 3	23.9	24	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	10.7	10.8	2, 2A, 3	24	24.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	10.8	10.9	2, 2A, 3	24.1	24.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	10.9	11	2, 2A, 3	24.2	24.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	11	11.1	2, 2A, 3	24.3	24.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	11.1	11.2	2, 2A, 3	24.4	24.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	KF,
B	11.2	11.3	2, 2A, 3	24.5	24.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	11.3	11.4	2, 2A, 3	24.6	24.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	11.4	11.5	2, 2A, 3	24.7	24.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	11.5	11.6	2, 2A, 3	24.8	24.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	11.6	11.7	2, 2A, 3	24.9	25	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	11.7	11.8	2, 2A, 3	25	25.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	11.8	11.9	2, 2A, 3	25.1	25.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	11.9	12	2, 2A, 3	25.2	25.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	12	12.1	2, 2A, 3	25.3	25.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	12.1	12.2	2, 2A, 3	25.4	25.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	12.2	12.3	2, 2A, 3	25.5	25.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	12.3	12.4	2, 2A, 3	25.6	25.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	12.4	12.5	2, 2A, 3	25.7	25.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	12.5	12.6	2, 2A, 3	25.8	25.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	12.6	12.7	2, 2A, 3	25.9	26	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
B	12.7	12.8	2, 2A, 3	26	26.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	12.8	12.9	2, 2A, 3	26.1	26.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	12.9	13	2, 2A, 3	26.2	26.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	13	13.1	2, 2A, 3	26.3	26.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	13.1	13.2	2, 2A, 3	26.4	26.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	13.2	13.3	2, 2A, 3	26.5	26.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	13.3	13.4	2, 2A, 3	26.6	26.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	13.4	13.5	2, 2A, 3	26.7	26.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	13.5	13.6	2, 2A, 3	26.8	26.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	13.6	13.7	2, 2A, 3	26.9	27	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	13.7	13.8	2, 2A, 3	27	27.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	13.8	13.9	2, 2A, 3	27.1	27.2	0-10	1	No	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	13.9	14	2, 2A, 3	27.2	27.3	0-10	1	No	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	14	14.1	2, 2A, 3	27.3	27.4	0-10	1	No	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	14.1	14.2	2, 2A, 3	27.4	27.5	0-10	1	No	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	14.2	14.3	2, 2A, 3	27.5	27.6	0-10	1	No	No	Triple Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	14.3	14.4	2, 2A, 3	27.6	27.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	14.4	14.5	2, 2A, 3	27.7	27.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	14.5	14.6	2, 2A, 3	27.8	27.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	14.6	14.7	2, 2A, 3	27.9	28	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	14.7	14.8	2, 2A, 3	28	28.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	AMBA	Unknown
B	14.8	14.9	2, 2A, 3	28.1	28.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	AMBA	Unknown
B	14.9	15	2, 2A, 3	28.2	28.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	AMBA	Unknown
B	15	15.1	2, 2A, 3	28.3	28.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	AMBA	Unknown
B	15.1	15.2	2, 2A, 3	28.4	28.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	AMBA	Unknown
B	15.2	15.3	2, 2A, 3	28.5	28.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	AMBA	Unknown
B	15.3	15.4	2, 2A, 3	28.6	28.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	AMBA	Unknown
B	15.4	15.5	2, 2A, 3	28.7	28.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	AMBA	Unknown
B	15.5	15.6	2, 2A, 3	28.8	28.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	AMBA	Unknown
B	15.6	15.7	2, 2A, 3	28.9	29	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	AMBA	Unknown
B	15.7	15.8	2, 2A, 3	29	29.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	AMBA	Unknown
B	15.8	15.9	2, 2A, 3	29.1	29.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	AMBA	Unknown
B	15.9	16	2, 2A, 3	29.2	29.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	AMBA	Unknown
B	16	16.1	2, 2A, 3	29.3	29.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	AMBA	Unknown
B	16.1	16.2	2, 2A, 3	29.4	29.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	AMBA	Unknown
B	16.2	16.3	2, 2A, 3	29.5	29.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	AMBA	Unknown
B	16.3	16.4	2, 2A, 3	29.6	29.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	AMBA	Unknown
B	16.4	16.5	2, 2A, 3	29.7	29.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	AMBA	Unknown
B	16.5	16.6	2, 2A, 3	29.8	29.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	16.6	16.7	2, 2A, 3	29.9	30	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	16.7	16.8	2, 2A, 3	30	30.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	16.8	16.9	2, 2A, 3	30.1	30.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	16.9	17	2, 2A, 3	30.2	30.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	17	17.1	2, 2A, 3	30.3	30.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	17.1	17.2	2, 2A, 3	30.4	30.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	17.2	17.3	2, 2A, 3	30.5	30.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	17.3	17.4	2, 2A, 3	30.6	30.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	17.4	17.5	2, 2A, 3	30.7	30.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	17.5	17.6	2, 2A, 3	30.8	30.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	17.6	17.7	2, 2A, 3	30.9	31	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	17.7	17.8	2, 2A, 3	31	31.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	17.8	17.9	2, 2A, 3	31.1	31.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
A	10.4	10.5	1, 2, 2A, 3	10.4	10.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	10.5	10.6	1, 2, 2A, 3	10.5	10.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	KF,
A	10.6	10.7	1, 2, 2A, 3	10.6	10.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	10.7	10.8	1, 2, 2A, 3	10.7	10.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	10.8	10.9	1, 2, 2A, 3	10.8	10.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	10.9	11	1, 2, 2A, 3	10.9	11	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	11	11.1	1, 2, 2A, 3	11	11.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	11.1	11.2	1, 2, 2A, 3	11.1	11.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	11.2	11.3	1, 2, 2A, 3	11.2	11.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	11.3	11.4	1, 2, 2A, 3	11.3	11.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	11.4	11.5	1, 2, 2A, 3	11.4	11.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	11.5	11.6	1, 2, 2A, 3	11.5	11.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	11.6	11.7	1, 2, 2A, 3	11.6	11.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	11.7	11.8	1, 2, 2A, 3	11.7	11.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	11.8	11.9	1, 2, 2A, 3	11.8	11.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	11.9	12	1, 2, 2A, 3	11.9	12	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	12	12.1	1, 2, 2A, 3	12	12.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	12.1	12.2	1, 2, 2A, 3	12.1	12.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	12.2	12.3	1, 2, 2A, 3	12.2	12.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	12.3	12.4	1, 2, 2A, 3	12.3	12.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	12.4	12.5	1, 2, 2A, 3	12.4	12.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	12.5	12.6	1, 2, 2A, 3	12.5	12.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	KF,
A	12.6	12.7	1, 2, 2A, 3	12.6	12.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	KF,
A	12.7	12.8	1, 2, 2A, 3	12.7	12.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	12.8	12.9	1, 2, 2A, 3	12.8	12.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	12.9	13	1, 2, 2A, 3	12.9	13	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	13	13.1	1, 2, 2A, 3	13	13.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	13.1	13.2	1, 2, 2A, 3	13.1	13.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	13.2	13.2	1, 2, 2A, 3	13.2	13.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	KF,
B	0	0.1	2, 2A, 3	13.3	13.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	0.1	0.2	2, 2A, 3	13.4	13.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	0.2	0.3	2, 2A, 3	13.5	13.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	0.3	0.4	2, 2A, 3	13.6	13.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	0.4	0.5	2, 2A, 3	13.7	13.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	0.5	0.6	2, 2A, 3	13.8	13.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	0.6	0.7	2, 2A, 3	13.9	14	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	0.7	0.8	2, 2A, 3	14	14.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	0.8	0.9	2, 2A, 3	14.1	14.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	0.9	1	2, 2A, 3	14.2	14.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	1	1.1	2, 2A, 3	14.3	14.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	1.1	1.2	2, 2A, 3	14.4	14.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	1.2	1.3	2, 2A, 3	14.5	14.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	1.3	1.4	2, 2A, 3	14.6	14.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	1.4	1.5	2, 2A, 3	14.7	14.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	1.5	1.6	2, 2A, 3	14.8	14.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	1.6	1.7	2, 2A, 3	14.9	15	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	1.7	1.8	2, 2A, 3	15	15.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	1.8	1.9	2, 2A, 3	15.1	15.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	1.9	2	2, 2A, 3	15.2	15.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	2	2.1	2, 2A, 3	15.3	15.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	2.1	2.2	2, 2A, 3	15.4	15.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	2.2	2.3	2, 2A, 3	15.5	15.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
B	2.3	2.4	2, 2A, 3	15.6	15.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	2.4	2.5	2, 2A, 3	15.7	15.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	2.5	2.6	2, 2A, 3	15.8	15.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	2.6	2.7	2, 2A, 3	15.9	16	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	2.7	2.8	2, 2A, 3	16	16.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	2.8	2.9	2, 2A, 3	16.1	16.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	2.9	3	2, 2A, 3	16.2	16.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	3	3.1	2, 2A, 3	16.3	16.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	3.1	3.2	2, 2A, 3	16.4	16.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	3.2	3.3	2, 2A, 3	16.5	16.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	3.3	3.4	2, 2A, 3	16.6	16.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	3.4	3.5	2, 2A, 3	16.7	16.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	3.5	3.6	2, 2A, 3	16.8	16.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	3.6	3.7	2, 2A, 3	16.9	17	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	3.7	3.8	2, 2A, 3	17	17.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	3.8	3.9	2, 2A, 3	17.1	17.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	3.9	4	2, 2A, 3	17.2	17.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	4	4.1	2, 2A, 3	17.3	17.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	4.1	4.2	2, 2A, 3	17.4	17.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	4.2	4.3	2, 2A, 3	17.5	17.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	4.3	4.4	2, 2A, 3	17.6	17.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	4.4	4.5	2, 2A, 3	17.7	17.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	4.5	4.6	2, 2A, 3	17.8	17.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	4.6	4.7	2, 2A, 3	17.9	18	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	4.7	4.8	2, 2A, 3	18	18.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	4.8	4.9	2, 2A, 3	18.1	18.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	4.9	5	2, 2A, 3	18.2	18.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	5	5.1	2, 2A, 3	18.3	18.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	5.1	5.2	2, 2A, 3	18.4	18.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	5.2	5.3	2, 2A, 3	18.5	18.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	5.3	5.4	2, 2A, 3	18.6	18.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	DETO,
B	5.4	5.5	2, 2A, 3	18.7	18.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	DETO,
B	5.5	5.6	2, 2A, 3	18.8	18.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	5.6	5.7	2, 2A, 3	18.9	19	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	5.7	5.8	2, 2A, 3	19	19.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	5.8	5.9	2, 2A, 3	19.1	19.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	5.9	6	2, 2A, 3	19.2	19.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	6	6.1	2, 2A, 3	19.3	19.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	DETO,
B	6.1	6.2	2, 2A, 3	19.4	19.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	DETO,
B	6.2	6.3	2, 2A, 3	19.5	19.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	6.3	6.4	2, 2A, 3	19.6	19.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	6.4	6.5	2, 2A, 3	19.7	19.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	6.5	6.6	2, 2A, 3	19.8	19.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	6.6	6.7	2, 2A, 3	19.9	20	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	6.7	6.8	2, 2A, 3	20	20.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	6.8	6.9	2, 2A, 3	20.1	20.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	6.9	7	2, 2A, 3	20.2	20.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	7	7.1	2, 2A, 3	20.3	20.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	7.1	7.2	2, 2A, 3	20.4	20.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	7.2	7.3	2, 2A, 3	20.5	20.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	7.3	7.4	2, 2A, 3	20.6	20.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
B	7.4	7.5	2, 2A, 3	20.7	20.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
A	0	0.1	1, 2, 2A, 3	0	0.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	0.1	0.2	1, 2, 2A, 3	0.1	0.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	0.2	0.3	1, 2, 2A, 3	0.2	0.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	0.3	0.4	1, 2, 2A, 3	0.3	0.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	0.4	0.5	1, 2, 2A, 3	0.4	0.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	0.5	0.6	1, 2, 2A, 3	0.5	0.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	0.6	0.7	1, 2, 2A, 3	0.6	0.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	0.7	0.8	1, 2, 2A, 3	0.7	0.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	0.8	0.9	1, 2, 2A, 3	0.8	0.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	DETO,
A	0.9	1	1, 2, 2A, 3	0.9	1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	DETO,
A	1	1.1	1, 2, 2A, 3	1	1.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	AMBA,DETO,
A	1.1	1.2	1, 2, 2A, 3	1.1	1.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	1.2	1.3	1, 2, 2A, 3	1.2	1.3	10-20	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	1.3	1.4	1, 2, 2A, 3	1.3	1.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	1.4	1.5	1, 2, 2A, 3	1.4	1.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	DETO,
A	1.5	1.6	1, 2, 2A, 3	1.5	1.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	DETO,
A	1.6	1.7	1, 2, 2A, 3	1.6	1.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	1.7	1.8	1, 2, 2A, 3	1.7	1.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	1.8	1.9	1, 2, 2A, 3	1.8	1.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	1.9	2	1, 2, 2A, 3	1.9	2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	2	2.1	1, 2, 2A, 3	2	2.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	2.1	2.2	1, 2, 2A, 3	2.1	2.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	DETO,
A	2.2	2.3	1, 2, 2A, 3	2.2	2.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	DETO,
A	2.3	2.4	1, 2, 2A, 3	2.3	2.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	2.4	2.5	1, 2, 2A, 3	2.4	2.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	2.5	2.6	1, 2, 2A, 3	2.5	2.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	2.6	2.7	1, 2, 2A, 3	2.6	2.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	2.7	2.8	1, 2, 2A, 3	2.7	2.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	2.8	2.9	1, 2, 2A, 3	2.8	2.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	2.9	3	1, 2, 2A, 3	2.9	3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	3	3.1	1, 2, 2A, 3	3	3.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	3.1	3.2	1, 2, 2A, 3	3.1	3.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	3.2	3.3	1, 2, 2A, 3	3.2	3.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	3.3	3.4	1, 2, 2A, 3	3.3	3.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	3.4	3.5	1, 2, 2A, 3	3.4	3.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	3.5	3.6	1, 2, 2A, 3	3.5	3.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	3.6	3.7	1, 2, 2A, 3	3.6	3.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	DETO	Unknown
A	3.7	3.8	1, 2, 2A, 3	3.7	3.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	3.8	3.9	1, 2, 2A, 3	3.8	3.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	3.9	4	1, 2, 2A, 3	3.9	4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	4	4.1	1, 2, 2A, 3	4	4.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	4.1	4.2	1, 2, 2A, 3	4.1	4.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	4.2	4.3	1, 2, 2A, 3	4.2	4.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	4.3	4.4	1, 2, 2A, 3	4.3	4.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	4.4	4.5	1, 2, 2A, 3	4.4	4.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	4.5	4.6	1, 2, 2A, 3	4.5	4.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	4.6	4.7	1, 2, 2A, 3	4.6	4.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	4.7	4.8	1, 2, 2A, 3	4.7	4.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	4.8	4.9	1, 2, 2A, 3	4.8	4.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	4.9	5	1, 2, 2A, 3	4.9	5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	5	5.1	1, 2, 2A, 3	5	5.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	5.1	5.2	1, 2, 2A, 3	5.1	5.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown

Segment	Mile From	Mile To	EIS Alternative	EIS From Mile	EIS To Mile	Ground Slope	Ground Disturbance	Mitigated	Helicopter Mitigation	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Habitat Quality	Known Special Status Wildlife Present	Wildlife Habitat
A	5.2	5.3	1, 2, 2A, 3	5.2	5.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	5.3	5.4	1, 2, 2A, 3	5.3	5.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	5.4	5.5	1, 2, 2A, 3	5.4	5.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	5.5	5.6	1, 2, 2A, 3	5.5	5.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	5.6	5.7	1, 2, 2A, 3	5.6	5.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	5.7	5.8	1, 2, 2A, 3	5.7	5.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	5.8	5.9	1, 2, 2A, 3	5.8	5.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	5.9	6	1, 2, 2A, 3	5.9	6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	KF,
A	6	6.1	1, 2, 2A, 3	6	6.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	6.1	6.2	1, 2, 2A, 3	6.1	6.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	DETO,
A	6.2	6.3	1, 2, 2A, 3	6.2	6.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	6.3	6.4	1, 2, 2A, 3	6.3	6.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	6.4	6.5	1, 2, 2A, 3	6.4	6.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	DETO,
A	6.5	6.6	1, 2, 2A, 3	6.5	6.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	6.6	6.7	1, 2, 2A, 3	6.6	6.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	DETO,
A	6.7	6.8	1, 2, 2A, 3	6.7	6.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	6.8	6.9	1, 2, 2A, 3	6.8	6.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	DETO,
A	6.9	7	1, 2, 2A, 3	6.9	7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	7	7.1	1, 2, 2A, 3	7	7.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	7.1	7.2	1, 2, 2A, 3	7.1	7.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	7.2	7.3	1, 2, 2A, 3	7.2	7.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	7.3	7.4	1, 2, 2A, 3	7.3	7.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	7.4	7.5	1, 2, 2A, 3	7.4	7.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	DETO,
A	7.5	7.6	1, 2, 2A, 3	7.5	7.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	7.6	7.7	1, 2, 2A, 3	7.6	7.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	7.7	7.8	1, 2, 2A, 3	7.7	7.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	7.8	7.9	1, 2, 2A, 3	7.8	7.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	7.9	8	1, 2, 2A, 3	7.9	8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	8	8.1	1, 2, 2A, 3	8	8.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	8.1	8.2	1, 2, 2A, 3	8.1	8.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	8.2	8.3	1, 2, 2A, 3	8.2	8.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	8.3	8.4	1, 2, 2A, 3	8.3	8.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	KF,
A	8.4	8.5	1, 2, 2A, 3	8.4	8.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	8.5	8.6	1, 2, 2A, 3	8.5	8.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	8.6	8.7	1, 2, 2A, 3	8.6	8.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	8.7	8.8	1, 2, 2A, 3	8.7	8.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	8.8	8.9	1, 2, 2A, 3	8.8	8.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	8.9	9	1, 2, 2A, 3	8.9	9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	9	9.1	1, 2, 2A, 3	9	9.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	9.1	9.2	1, 2, 2A, 3	9.1	9.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	9.2	9.3	1, 2, 2A, 3	9.2	9.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	9.3	9.4	1, 2, 2A, 3	9.3	9.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	9.4	9.5	1, 2, 2A, 3	9.4	9.5	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	9.5	9.6	1, 2, 2A, 3	9.5	9.6	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	9.6	9.7	1, 2, 2A, 3	9.6	9.7	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	9.7	9.8	1, 2, 2A, 3	9.7	9.8	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	KF,
A	9.8	9.9	1, 2, 2A, 3	9.8	9.9	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	M	Unknown	Unknown
A	9.9	10	1, 2, 2A, 3	9.9	10	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	10	10.1	1, 2, 2A, 3	10	10.1	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	10.1	10.2	1, 2, 2A, 3	10.1	10.2	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	10.2	10.3	1, 2, 2A, 3	10.2	10.3	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown
A	10.3	10.4	1, 2, 2A, 3	10.3	10.4	0-10	1	No	No	Double Circuit	0.65	0.65	0.08	0.08	L	Unknown	Unknown

APPENDIX C: BIOLOGICAL IMPACT TABLES

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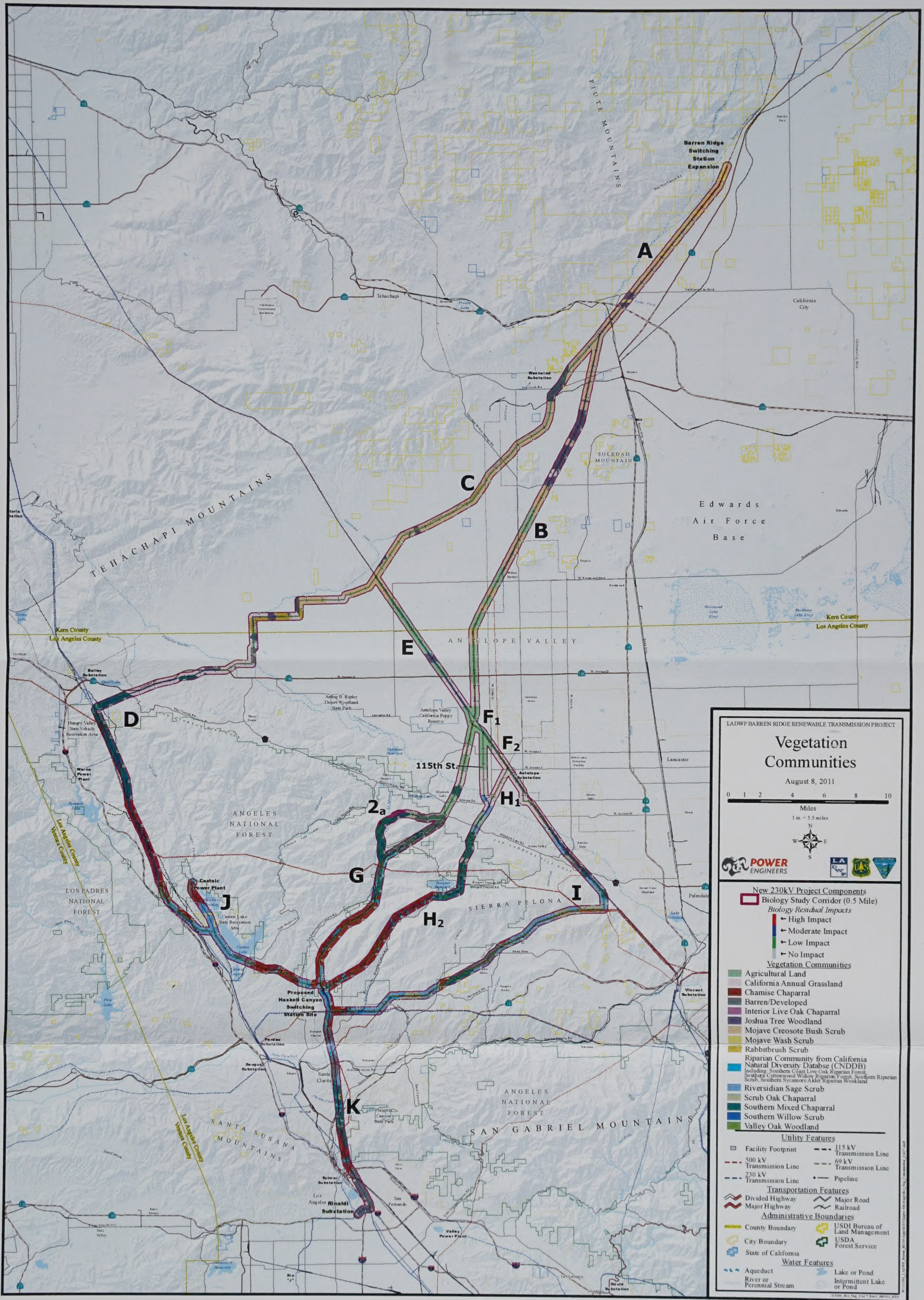
Barren Ridge Switching Station Expansion
PIUTE MOUNTAINS
A
Tehachapi
California City
Westwind Substation
Mojave
SOLEDAD MOUNTAIN
C
B
Edwards Air Force Base
TEHACHAPI MOUNTAINS
Kern County
Los Angeles County
ANTELOPE VALLEY
E
Bailey Substation
Arthur B. Ripley Desert Woodland State Park
Antelope Valley California Poppy Reserve
Hungry Valley State Vehicle Recreation Area
D
F1
F2
115th St.
Antelope Substation
Lancaster
Warne Power Plant
H1
2a
ANGELES NATIONAL FOREST
G
Castaic Power Plant
J
Castaic Lake State Recreation Area
SIERRA PELONA
H2
I
Palmdale
LOS PADRES NATIONAL FOREST
Los Angeles County
Ventura County
Vincent Substation
Proposed Haskell Canyon Switching Station Site
Pardee Substation
Saugus Substation
Santa Clarita
K
Placerita Canyon State Park
ANGELES NATIONAL FOREST
SAN GABRIEL MOUNTAINS
SANTA SUSANA MOUNTAINS
Sylmar Substation
Los Angeles
Rinaldi Substation
San Fernando
Valley Power Plant
Gould Substation
0 1 2 4 6 8 10
Miles
1 in. = 5.5 miles
N
W
E
S
POWER ENGINEERS
LA DWP
New 230kV Project Components
Biology Study Corridor (0.5 Mile)
Biology Residual Impacts
← High Impact
← Moderate Impact
← Low Impact
← No Impact
Vegetation Communities
Agricultural Land
California Annual Grassland
Chamise Chaparral
Barren/Developed
Interior Live Oak Chaparral
Joshua Tree Woodland
Mojave Creosote Bush Scrub
Mojave Wash Scrub
Rabbitbrush Scrub
Riparian Community from California Natural Diversity Databse (CNDDB) Including: Southern Coast Live Oak Riparian Forest, Southern Cottonwood Willow Riparian Forest, Southern Riparian Scrub, Southern Sycamore Alder Riparian Woodland
Riversidian Sage Scrub
Scrub Oak Chaparral
Southern Mixed Chaparral
Southern Willow Scrub
Valley Oak Woodland
Utility Features
Facility Footprint
115 kV Transmission Line
500 kV Transmission Line
69 kV Transmission Line
230 kV Transmission Line
Pipeline
Transportation Features
Divided Highway
Major Road
Major Highway
Railroad
Administrative Boundaries
County Boundary
USDI Bureau of Land Management
City Boundary
USDA Forest Service
State of California
Water Features
Aqueduct
Lake or Pond
River or Perennial Stream
Intermittent Lake or Pond
115344_Bio_Veg_11x17_Rev1_080911_KES

LADWP BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

Vegetation Communities

August 8, 2011

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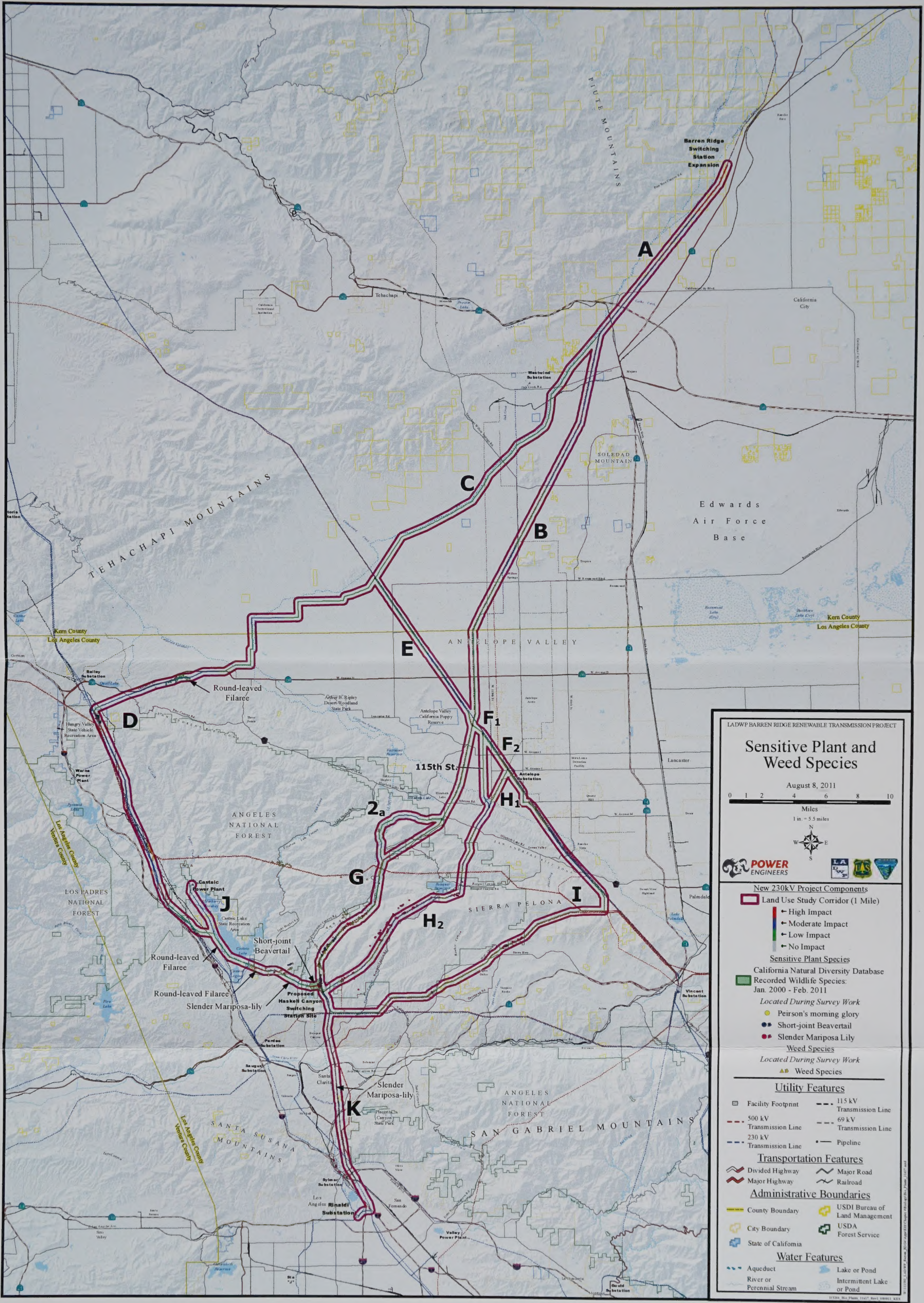

LADWP BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

Sensitive Plant and Weed Species

August 8, 2011

0 1 2 4 6 8 10
Miles
1 in. = 5.5 miles
N
W
E
S
POWER ENGINEERS
New 230kV Project Components
Land Use Study Corridor (1 Mile)
High Impact
Moderate Impact
Low Impact
No Impact
Sensitive Plant Species
California Natural Diversity Database Recorded Wildlife Species: Jan. 2000 - Feb. 2011
Located During Survey Work
Peirson's morning glory
Short-joint Beavertail
Slender Mariposa Lily
Weed Species
Located During Survey Work
Weed Species
Utility Features
Facility Footprint
115 kV Transmission Line
500 kV Transmission Line
69 kV Transmission Line
230 kV Transmission Line
Pipeline
Transportation Features
Divided Highway
Major Road
Major Highway
Railroad
Administrative Boundaries
County Boundary
USDI Bureau of Land Management
City Boundary
USDA Forest Service
State of California
Water Features
Aqueduct
Lake or Pond
River or Perennial Stream
Intermittent Lake or Pond
A
B
C
D
E
F1
F2
115th St.
H1
H2
2a
G
I
J
K
Barren Ridge Switching Station Expansion
PIUTE MOUNTAINS
TEHACHAPI MOUNTAINS
Tehachapi
California City
Westwind Substation
SOLEDAD MOUNTAIN
Edwards Air Force Base
Kern County
Los Angeles County
ANTELOPE VALLEY
Bailey Substation
Round-leaved Filaree
Arthur B. Ripley Desert Woodland State Park
Antelope Valley California Poppy Reserve
Antelope Substation
Lancaster
Palmdale
Hungry Valley State Vehicle Recreation Area
Warne Power Plant
ANGELES NATIONAL FOREST
LOS PADRES NATIONAL FOREST
Los Angeles County
Ventura County
Castaic Power Plant
Castaic Lake State Recreation Area
Short-joint Beavertail
Round-leaved Filaree
Round-leaved Filaree
Slender Mariposa-lily
Proposed Haskell Canyon Switching Station Site
SIERRA PELONA
Vincent Substation
Pardee Substation
Saugus Substation
Santa Clarita
Slender Mariposa-lily
Placerita Canyon State Park
ANGELES NATIONAL FOREST
SAN GABRIEL MOUNTAINS
SANTA SUSANA MOUNTAINS
Sylmar Substation
Los Angeles
Rinaldi Substation
San Fernando
Valley Power Plant
Gould Substation
115264_Bio_Plants_11x17_Rev1_080911_KES

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APPENDIX D: FEDERAL AND STATE CONTACT SUMMARIES

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BRRTP FEDERAL CONTACT SUMMARIES

Agency	Study Component	Date	Type of Contact	Summary
US Forest Service, Angeles National Forest, Janet Nickerman	Species list	09 January 2008	Email	USFS provided Angeles National Forest sensitive species list.
Bureau of Land Management, Ridgecrest Field Office, Shelly Ellis	Species list	06 March 2008	Email	BLM provided their sensitive species list.
US Forest Service, Angeles National Forest, Arcadia Office	Sensitive Wildlife Species	25 March 2008	Meeting	Discussed sensitive wildlife species and habitat, survey needs, survey approach and potential impact of transmission line.
US Forest Service, Marian Kadota	Plant Management Plans	01 April 2008	Written Communication	USFS provided copies of the Forest Service plant management guides.
US Fish and Wildlife Service, Ventura Office	Species list	02 April 2008	Written Communication	Request for Special-Status Species List for the Barren Ridge Renewable Transmission Project, Kern and Los Angeles Counties.
US Forest Service, Angels National Forest, Nancy Sandburg and Janet Nickerman	Survey Approach	03 April 2008	Email	Requested review of survey approach for the BRRTP.
US Forest Service, Angeles National Forest, Arcadia Office	Sensitive Plant Species	04 April 2008	Meeting	Discussed sensitive plant and invasive species in study area, survey needs, survey approach and potential impact of transmission line.

BRRTP Federal Contact Summaries (continued)

Agency	Study Component	Date	Type of Contact	Summary
US Fish and Wildlife Service, Ventura Office	Species list	01 May 2008	Written Communication	USFWS provided list of species fulfilling the requirements of the USFWS under Section 7(c) of the Endangered Species Act.
US Fish and Wildlife Service, Ventura Office, Chris Dellith	Protocol Surveys for Amphibian species	08 May 2008	Telephone	USFWS reviewed the amphibian site assessment report and gave verbal approval to proceed with protocol surveys.
US Forest Service, Angeles National Forest, Katie VinZant	Botany Surveys	08 May 2008	Meeting	Discussed the Botany Surveys, Seed Collection and use of Herbicides.
US Forest Service, Angeles National Forest, Ann M Berkley	GIS data	09 May 2008	Email	Spotted Owl shapefiles provided for the Project Area.
US Forest Service, Angeles National Forest, Ann M Berkley	GIS data	12 May 2008	Email	USFS provided Arroyo Toad and CA red-legged frog GIS habitat data.
US Forest Service, Angeles National Forest, Justin Seastrand	Avian Risk Assessment	12 May 2008	Email	USFS provided a draft avian risk assessment report.
US Fish and Wildlife Service, Ventura Office, Ashleigh Blackford	Desert Tortoise	20 May 2008	Telephone	Discussed habitat assessment for desert tortoise and USFWS recommended survey approach.

BRRTP Federal Contact Summaries (continued)

Agency	Study Component	Date	Type of Contact	Summary
US Forest Service, Angeles National Forest, Nancy Sandburg	Fauna and Flora Records	06 June 2008	Email	USFS provided Flora and Fauna spreadsheet for recording data.
US Fish and Wildlife Service, Ventura Office, Della Snyder-Velto	Wildlife Species	12 June 2008	Telephone	Discussed survey needs and wildlife in study area.
US Fish and Wildlife Service, Ventura Office, Della Snyder Velto	Unarmored three-spine stickleback	12 June 2008	Email	Discussed analyzing effects of the action to UTS.
US Forest Service, Angeles National Forest, Katie VinZant	Botany reports	20 June 2008	Email	USFS provided template for the ANF requirements for botany reports.
US Fish and Wildlife Service, Arcadia Office. Della Snyder-Velto	Sensitive Species and ESA Section 7	17 July 2008	Meeting	Discussed Biological Surveys, ESA Section 7, Biological Assessment, and Consultations.
US Fish and Wildlife Service, Hopper Mountain NWR Complex, Chris Barr	CA Condor	21 July 2008	Email	USFWS provided zip file containing GIS shapefile of all Global Positioning System (GPS) records since 2005 within the Project area.
US Forest Service, Angeles National Forest, Patricia Krueger	RCA's	31 July 2008	Email	USFS provided Forest Service Handbook on Soil and Water Conservation

BRRTP Federal Contact Summaries (continued)

Agency	Study Component	Date	Type of Contact	Summary
Bureau of Land Management, Ridgecrest Field Office, Linn Gum	Mojave ground squirrel	01 August 2008	Email	Discussed the MGS and review of the West Mojave Plan conclusively shows the area of interest for the BRRTP is not contained within the lands designated by MGS conservation area.
US Forest Service, Marian Kadota	CA Condor	01 August 2008	Email	Discussed the Federally listed CA Condor and impact of power line.
US Forest Service, Angeles National Forest, Patti Krueger	Avian Risk Assessment Report	04 September 2008	Email	A request had been submitted to USFS by Power for the missing figures and maps of the Avian Risk Assessment Report USFS provided as an example. Patti indicated that the missing information would not be available until mid-December.
US Forest Service, Angeles National Forest, Nathan Sill	RCAs	05 September 2008	Email	USFS provided additional data regarding the RCAs. This included GIS files, reports and clarification to questions regarding the 5-step process in identifying RCAs for BRRTP
US Fish and Wildlife Service, Della Snyder-Velto	Avian Risk Assessment	12 September 2008	Email	USFWS provided resource contact information to help with locating data and assessing risk for avian species.
USDA Forest Service, Angeles National Forest, Nathan Sill	RCA's and Biological surveys	22 October 2008	Meeting	Update on the progress of the biological surveys and reports. Also discussed RCA's.

BRRTP Federal Contact Summaries (continued)

Agency	Study Component	Date	Type of Contact	Summary
USDA Forest Service, Angeles National Forest, USFWS, and BLM	RCA's, biological surveys, and USFWS consultations	November 25 2008	Meeting	Discussed results of biological surveys and approach to Section 7 consultations.
USDA Forest Service, ANF and USFWS	BIO Tech Report, BA and schedule	October 29, 2009	Meeting	Discussed Bio tech report comments and BA schedule, including data needs.
USDA Forest Service, ANF	RCA's	December 9 2009	Meeting	Discussed Riparian Conservation Area Surveys
USDA Forest Service, ANF	RCA's	January 6, 2010	Field visit	Field visit with ANF Biologist Nathan Sill to review/refine RCA buffers along Segment G.
ANF, BLM, USFWS	Biological surveys, USFWS consultations	March 18, 2010	Meeting	Discussed results of 2009 biological surveys and Biological Assessment
ANF, BLM, USFWS	Biological Assessment, Avian Protection Plan, Section 7 Consultation Schedule	August 24, 2010	Meeting	Discussed Biological Assessment and data needs. Also discussed the Avian Protection Plan.

STATE CONTACT SUMMARIES

Agency	Study Component	Date	Type of Contact	Summary
CA Department of Fish and Game, Dan Blankenship	Sensitive Species	01 April 2008	Telephone	Contacted CDFG to establish the contact for the Project.
CA Department of Fish and Game, Dan Blankenship	Sensitive Species	16 April 2008	Meeting	Discussed the Project, survey needs and wildlife in study area.
CA Department of Fish and Game, Dan Blankenship	Sensitive Species	05 May 2008	Telephone	Discussed species range, potential sensitive species occurrences and potential to be found within the study area.
CA Department of Fish and Game, Dan Blankenship	Coast horned lizard	05 May 2008	Email	Requested information regarding the CHL and distribution data.
CA Department of Fish and Game, Edmund Pert	Response to NOP	09 May 2008	Written Communication	Provided comments and review of the biological resources within the proposed project and recommended information to be included in the DEIR.
CA Department of Fish and Game, Dan Blankenship	Mojave ground squirrel	13 May 2008	Email	Requested additional information on the MGS and the potential for it to occur in the study area. CDFG has indicated there is a potential for the species to occur in the study area.

State Contact Summaries (continued)

Agency	Study Component	Date	Type of Contact	Summary
CA Department of Fish and Game, Dan Blankenship	Desert sensitive species	22 May 2008	Email	Provided CDFG with the BRRTP contact with USFWS.
CA Department of Fish and Game, Annette Tenneboe and Dan Blankenship	Survey Approach	30 May 2008	Teleconference	Discussed sensitive species, survey needs, survey approach and established that Dan Blankenship will be the lead contact for BRRTP.
CA Department of Fish and Game, Annette Tenneboe and Dan Blankenship	Survey Update	28 July 2008	Email	Provided an update with the progress of the survey work.
CA Department of Fish and Game, Julie Vance	Desert Species	29 July 2008	Email	Annette Tenneboe notified POWER that she was no longer the CDFG Region 4 contact for BRRTP. Julie Vance was contacted to provide a new contact for Region 4.

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Barren Ridge Renewable Transmission Project

United States Department of Interior, Fish and Wildlife Service

Contact History

POWER ENGINEERS, INC.
COMMUNICATIONS

POWER ENGINEERS

731 E. BALL ROAD
SUITE 100
ANAHEIM, CA 92805-5951

PHONE 714-507-2700
FAX 714-507-2799

FACSIMILE COVER SHEET

DATE: April 2, 2008

TO: Ms. Diane K. Nola FAX NUMBER: (805) 644-3958
US Fish and Wildlife Service, Ventura Office

CC: FAX NUMBER:

SUBJECT: Request for Special-Status Species List for the Barren Ridge Renewable Transmission Project, Kern and Los Angeles Counties.

PROJECT NUMBER: 113807.02.02.02 TOTAL NUMBER OF PAGES INCLUDING THIS PAGE: 4 ORIGINAL TO FOLLOW VIA U.S. MAIL: YES ☑ NO ☐

MESSAGE

Sincerely,

Vanessa

Vanessa Gutierrez

PLEASE CALL IF FAX IS INCOMPLETE OR ILLEGIBLE.

This message is intended only for the use of the individual or entity to which it is addressed, and may contain information that is privileged, confidential and exempt from disclosure under applicable law. If the reader of this message is not the intended recipient, or the employee or agent responsible for delivering the message to the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please notify us immediately by telephone and return the original message to us at the above address via U.S. Mail Service. Thank you.

www.powereng.com

TRANSMISSION VERIFICATION REPORT

TIME : 04/02/2008 10:04
NAME :
FAX :
TEL :
SER.# : 000L5J118459

DATE,TIME	04/02 10:00
FAX NO./NAME	918056443958
DURATION	00:04:02
PAGE(S)	04
RESULT	OK
MODE	STANDARD ECM

April 2, 2008

Ms. Diane K. Noda,
Ventura Fish and Wildlife Office
U.S. Fish and Wildlife Service
Ventura, CA 93001

SUBJECT: Request for Special-Status Species List for the Barren Ridge Renewable Transmission Project, Kern and Los Angeles County

Dear Ms. Diane K. Noda:

The City of Los Angeles Department of Water and Power (LADWP), is proposing the Barren Ridge Renewable Transmission Project to access clean, renewable resources in the Tehachapi Mountain and Mojave Desert areas, and improve reliability and upgrade transmission capacity. The Forest Service, BLM, and LADWP will prepare a joint Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the Barren Ridge Renewable Transmission Project. The Forest Service, BLM, and LADWP have identified preliminary alternatives to the proposed project

The Barren Ridge Renewable Transmission Project spans a distance of approximately 75 miles from the Mojave Desert south to the San Fernando Valley. The project is located within northwestern Los Angeles County and southwestern Kern County. The project study area is generally defined by the following limits: the northern boundary is the southern slopes of the Tehachapi Mountains, eastern boundary parallels State Route 14, southern boundary generally parallels the Santa Clara River, and the western boundary parallels Interstate 5. The study area measures approximately 1,280 square miles. Within this study area several routing possibilities have been identified that traverse through the Antelope Valley, across Angeles National Forest, and public lands located in the Mojave Desert. Please refer to the enclosed map for the location of the alternatives currently being considered.

Power Engineers, Inc. is requesting a list of all species that are listed, proposed for listing, or candidates for listing as threatened or endangered under the Endangered Species Act that could occur within the Barren Ridge Renewable Transmission Line project area. The Notice of Preparation of a Draft Environmental Impact Report for the Barren Ridge Renewable Transmission Project will be sent to agencies on April 4, 2008.

There are several alternative corridors being proposed and a map of the proposed alternative corridors is attached. The project corridors are located in the following USGS 7.5-minute topographic quadrangle maps:

Agua Dulce
Black Mountain

Cache Peak
Del Sur

Fairmont Butte
Green Valley
Lake Hughes
La Liebre Ranch
Lebec
Liebre Mountain
Little Buttes
Mint Canyon
Mojave
Mojave NE
Monolith
Neenach School
Newhall
Ritter Ridge
San Fernando
Sleepy Valley
Soledad Mountain
Tylerhorse Canyon
Warm Springs Mountain
Whitaker Peak
Willow Springs

Please send or fax the requested lists to me at 714.507.2799. Thank you for your prompt attention. If you have any questions or need additional information, please call me at [redacted]

Sincerely,

Vanessa Gutierrez
Wildlife Biologist

Enclosure
Location Map

Garcia and Associates
1716 West Main St., Ste. 8-F
Bozeman, Montana 59715

Phone: 406/582-0661
Fax: 406/582-0659

GANDA

To: **Roger Root, US Fish and Wildlife Service**

From: **Wendy Roberts, Garcia and Associates**

Date: **21 April 2008**

RE: **Site Assessments for California Red-legged Frog and Arroyo Toad in San Francisquito Canyon**

Attached please find 10 site assessment forms for amphibian surveys completed the week of 7-11 April 2008. These surveys were completed to evaluate habitat for California red-legged frog and the arroyo toad along a proposed alternative alignment for a transmission line from Barren Ridge to Castaic. This possible alignment generally parallels, and in a few places crossed, San Francisquito Creek, northeast of Santa Clarita in Los Angeles County, California. Attached to the forms are maps, photographs, and field notes. I have also attached my resume, and a map of the general area showing the location of the 10 site assessments. Since no site assessment forms exist in the protocol for arroyo toad, the site assessment form from the 2005 Protocol for the California red-legged frog was used.

We identified a probable California red-legged frog tadpole and called the Ventura office of US Fish and Wildlife Service to let them know of this finding. I spoke with Doug Cooper on 14 April 2008, and he identified you as the person most likely to handle surveys for the area around San Francisquito Canyon.

In the near future we would like to discuss with US Fish and Wildlife Service permission to begin conducting protocol-level surveys for the California red-legged frog and the arroyo toad. After viewing and evaluating the habitat along San Francisquito Creek we would like permission to conduct surveys for California red-legged frog at sites 1-5 and sites 9 and 10 (as numbered in the attached site assessment forms), and for the arroyo toad at sites 1-5 and sites 7 and 10.

United States Department of the Interior

TAKE PRIDE IN AMERICA

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

IN REPLY REFER TO:
2008-SL-0346

May 1, 2008

Vanessa Gutierrez
Power Engineers, Inc.
731 E. Ball Road, Suite 100
Anaheim, California 92805-5951

Subject: Species List for the Proposed Barren Ridge Renewable Transmission Project, Kern and Los Angles County, California

Dear Ms. Gutierrez:

This letter is in response to your request of April 2, 2008, for information on endangered, threatened, proposed, and candidate species that could occur within the subject project area. The proposed work area and preliminary alternatives traverse the Antelope Valley and Angeles National Forest. Given that the Bureau of Land Management and Forest Service intend to prepare a draft environmental impact statement for the proposed action, we assume a Federal nexus for compliance with the Endangered Species Act of 1973, as amended, exists; therefore, our response is made pursuant to section 7(a)(2) of the Endangered Species Act of 1973, as amended (Act).

The enclosed list of species fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act. The Forest Service and Bureau of Land Management as Federal co-lead agencies have the responsibility to review the proposed activities and determine whether any listed species may be affected. Because the agencies intend to prepare an environmental impact statement, the Forest Service and Bureau of Land Management have the responsibility to prepare a biological assessment to make a determination of the effects of the action on the listed species. If the Forest Service and Bureau of Land Management determine that a listed species is likely to be adversely affected, they should request, in writing through our office, formal consultation pursuant to section 7 of the Endangered Species Act. Informal consultation may be used to exchange information and resolve conflicts with respect to the listed species prior to a written request for formal consultation. During this review process, the Forest Service and Bureau of Land Management may engage in planning efforts but may not make any irreversible commitment of resources. Such a commitment could constitute a violation of section 7(d) of the Endangered Species Act.

Only listed species receive protection under the Endangered Species Act. We recommend that you review information in the California Department of Fish and Game's Natural Diversity Data Base regarding other sensitive species that may occur in the project area. You can contact the

California Department of Fish and Game at [redacted] for information on other sensitive species that may occur in this area.

If you have any questions regarding this matter, please contact Ashleigh Blackford of the Ventura Fish and Wildlife Office at [redacted].

Sincerely,

Raymond Bransfield

Raymond Bransfield
Senior Biologist

LISTED AND PROPOSED SPECIES THAT MAY OCCUR IN THE VICINITY OF THE PROPOSED BARREN RIDGE RENEWABLE TRANSMISSION PROJECT IN KERN AND LOS ANGELES COUNTY, CALIFORNIA

Birds		
California condor	*Gymnogyps californianus*	E
Coastal California gnatcatcher	*Polioptila californica*	T, CH
Southwestern willow flycatcher	*Empidonax traillii extimus*	E, CH
Least Bell's vireo	*Vireo bellii pusillus*	E
Yellow-billed cuckoo	*Coccyzus americanus*	C
Reptile		
Desert tortoise	*Gopherus agassizii*	T
Amphibians		
California red-legged frog	*Rana aurora draytonii*	T, CH
Arroyo toad	*Bufo californicus*	E, CH
Fish		
Unarmored threespine stickleback	*Gasterosteus aculeatus williamsoni*	E
Invertebrates		
Riverside fairy shrimp	*Streptocephalus woottoni*	E
Vernal pool fairy shrimp	*Branchinecta lynchi*	T
Plants		
California orcutt grass	*Orcuttia californica*	E
Nevin's barberry	*Berberis nevinii*	E
Slender-horned spineflower	*Dodecahema leptoceras*	E
Spreading navarretia	*Navarretia fossalis*	T

Key:
E - Endangered
T - Threatened
CH - Critical habitat
C - Candidate species for which the Fish and Wildlife Service has on file sufficient information on the biological vulnerability and threats to support proposals to list as endangered or threatened.

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

Phone Conversation: Chris (USFWS) and Vanessa Gutierrez (POWER)
Date: May 8, 2008

Chris was returning a call for Ashleigh Blackford who is the USFWS co-lead for this project. He indicated that they have reviewed the amphibian site assessment reports and are giving verbal approval to proceed with protocol surveys.

The ONLY area in which we should avoid is the San Francisquito Dam area. This site is currently being monitored.

He also indicated that Fish and Game located Unarmored Threespine Stickleback in Bouquet Creek. We need to look into this species and its potential to be impacted by the Project.

Della Snyder-Velto will be taking a co-lead position with this project. She is located in the Arcadia US Forest Service Office.

[redacted]

GANDA

Garcia and Associates
1716 West Main St., Ste. 8-F
Bozeman, Montana 59715

Phone: 406/582-0661
Fax: 406/582-0659

To: **Della Snyder-Velto and Ashley Blackford, Ventura Office, US Fish and Wildlife Service**

From: **Wendy Roberts, Garcia and Associates**

Date: **12 May 2008**

RE: **Site Assessments for California Red-legged Frog and Arroyo Toad in the Project Area for the Barren Ridge Renewable Transmission Project**

Attached please find another eight site assessment forms for amphibian surveys completed the week of 21 - 25 April 2008. These surveys were completed to evaluate habitat for California red-legged frog and the arroyo toad along proposed alternative alignments for a transmission line from Barren Ridge to Castaic. This project is now referred to as the Barren Ridge Renewable Transmission Project (BRRTP).

This memo follows the one dated 21 April 2008 that was forwarded to Roger Root of your office by Los Angeles Department of Water and Power (LADWP). I understand that you are now the lead biologists for amphibian surveys for BRRTP, and am thus sending this memo and site assessment forms to you. A second week of assessing sites was necessary to evaluate possible TES amphibian habitat for possible BRRTP alignments.

This second week of searching for amphibian habitat encompassed more areas near the line close to San Francisquito Canyon (running roughly over parts of Pettinger and Dry canyons at the southwestern end of the alignment), a site near Bouquet Canyon, and a site north of Castaic Lake; all in Los Angeles County, California. Attached to the site assessment forms are maps, photographs, and field notes. I have not attached my resume since I included it previously, but I have included a map of the general area showing the location of the eight site assessments. Since no site assessment forms exist in the protocol for arroyo toad, the site assessment form from the 2005 Protocol for the California red-legged frog was used. Site Assessments 12 and 13 appear to be about exactly one mile away from the CNDDB record for California red-legged frog in San Francisquito Canyon. I have attached the CNDDB record to this memo.

We would like to discuss with US Fish and Wildlife Service permission to begin conducting protocol-level surveys for the California red-legged frog and the arroyo toad. Also, we will be in the area of the BRRTP this week of May 12-17, 2008 starting some amphibian surveys. We are starting surveys as a good-faith effort to comply with requests from Angeles National Forest, which wants sufficient protocol-level surveys to characterize TES amphibian species presence in areas possibly affected by the project. Further, we want to comply with the arroyo toad protocol to conduct at least two surveys (one day and one night) during the month of May. Finally, we understand from advice by a biologist experienced with arroyo toad on the Angeles National Forest (Ruben Ramirez), that we are approaching the usual peak time to find this species breeding at some of the relatively high elevation arroyo toad sites on the Angeles NF.

After viewing and evaluating the habitat along at these sites during the week of 21 to 25 April 2008, we would like permission to conduct surveys for California red-legged frog at sites 11, 12, 13, 14, and 17 (as numbered in the attached site assessment forms), and for the arroyo toad at sites 12, 13, 14, and 18. I would like to discuss with USFWS sites 15 and 16, which take a long rugged hike to access, and are practical or safe to access at nighttime.

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

Phone Conversation: Ashleigh Blackford (USFWS) and Vanessa Gutierrez (POWER)
Date: May 20, 2008
Time: 10:00 AM
Purpose: Desert Tortoise Survey Needs

Vanessa received a call from Ashleigh Blackford of the Ventura Fish and Wildlife Office regarding BRRTP and desert tortoise and survey needs. USFWS has requested that we conduct a habitat assessment for the desert tortoise by walking in a zigzag pattern in areas that are suitable within our corridors. They are *not* requesting protocol surveys this year. USFWS anticipate we will conduct protocol level surveys when we have a footprint.

The habitat assessment using the zigzag pattern USFWS recommended will be conducted this summer. POWER also received permission to conduct these surveys outside the survey time period (March 25 – May 31) as indicated on the USFWS Desert Tortoise Guidelines.

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

Phone Conversation between: Della Snyder-Velto (USFWS) and Vanessa Gutierrez (POWER)
Date: June 12, 2008

Vanessa contacted Della regarding the consultation process for BRRT and survey needs/ protocols for federally listed species in the Angels National Forest. Della will be a co-lead with Ashleigh Blackford on the BRRTP and responsibilities are documented below:

- Della Snyder-Velto will be the contact for the federally listed species in the Angeles National Forest
- Ashleigh Blackford will be the contact for the federally listed species in the desert.

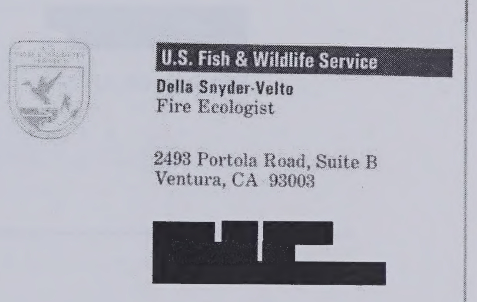
She mentioned that the unarmored threespine stickleback(UTS) is located in the San Francisquito Creek, whole length of the Bouquet Creek, and Soledad Creek. USGS will be conducting a three year survey along the San Francisquito Creek for the stickleback and CA red-legged frog. Forest Service has also contracted USGS to survey for the stickleback in Bouquet Creek and no start date has been developed for this yet.

USFWS recommended that BRRT survey for the species in Bouquet Creek and be cautious that they may be breeding with the armored species.

Della will provide reports regarding the stickleback.

Below is here contact information through August. Starting in September she will be in the Ventura Office permanently.

[redacted]



U.S. Fish & Wildlife Service

Della Snyder-Velto
Fire Ecologist

2493 Portola Road, Suite B
Ventura, CA 93003

[redacted]

Vanessa Gutierrez 2729

From: [redacted]
Sent: Thursday, June 12, 2008 12:48 PM
To: Vanessa Gutierrez 2729
Subject: Re: Barren Ridge Survey Question

Based on the known presence of the species and the reports I just sent you, you can assume presence of UTS in Bouquet Creek.

Regarding your approach to analyzing effects of the action, I think it is necessary to establish whether or not listed species habitat is present, the quality of habitat, and what direct and indirect impacts would to habitat may occur from project activities. If you assume presence of species and/or habitat, the Service will have to assume that all habitat is suitable and essential to the species and therefore, impacts would potentially be adverse. It may be that impacts would be localized instead of widespread; it's easier to address localized impacts to habitat and design effective measures to reduce the effects in those areas. We also need to quantify in some way impacts from sedimentation and erosion on aquatic systems. Detailed habitat assessments might help in this respect.

Della

[redacted]

06/12/2008 11:22 AM

To [redacted]

cc

Subject
Barren Ridge Survey Question

Hi Della,

As I'm forecasting the survey work I've got one additional question regarding the unarmored three-spine stickleback (Gasterosteus aculeatus williamsoni). Since we have known locations for this species and they are restricted to these sites, do we need to re-survey the known locations or can we assume presence and mitigate as necessary?

We are surveying every drainage that crosses under the preliminary corridors. This was requested by Forest Service so we can anticipate indirect impacts from construction. During this survey we are conducting a habitat assessments and streambed analysis to understand stream flow.

Please let me know what your thoughts are on this.

Thanks again,

MEETING MINUTES

SUBJECT: BRRTP Biology Meeting

MEETING DATE: July 17, 2008 **LOCATION:** Arcadia Forest Service Office

PROJECT NAME: BRRTP **PROJECT #:** 113807

PREPARED BY: Vanessa Gutierrez

TO:	LADWP	FS	BLM	USFWS
	Mark Sedlacek	Marian Kadota	Linn Gum	Della Snyder-Velto
	Chuck Holloway	Justin Seastrand	Robert Parker	Ashleigh Blackford
	Nadia Dale	Nancy Sandburg		
		Katie Vinzant		
	POWER			
	Jim Jensen			
	Mike Strand			
	Karen Cadavona			
	Vanessa Gutierrez			

ATTENDEES:

Nadia Dale, Della Snyder-Velto, Nancy Sandburg

1. Introductions

Patty Krueger will be working as the Forest Service biologist co-lead contact for BRRTP for the next three months. She will be assisting Nathan Sill who is also the lead for BRRTP.

2. Project Overview & Biological Surveys

All alternatives are currently being surveyed. This consists of a combination of protocol and habitat assessments. A habitat assessment was conducted for the riparian bird species this year and protocol surveys will be conducted next spring based on the results of the habitat assessment.

A detailed habitat assessment will be conducted for the desert sensitive species. This will consist of walking the 500-foot corridor where right of way entry is permitted. We will not be accessing private property.

Katherine Darst is the Ventura Fish and Wildlife lead biologist for the desert tortoise.

The project will be utilizing existing access roads and corridors. Surveys on the roads and spur roads will need to wait until design is completed. Timing of surveys for each new road and spur road will be based on the survey window for each biological resource.

MEETING MINUTES

3. Biological Resources

Forest Service discussed the Riparian Conservation Areas (RCA) and BRRTP needs to take this into account. If the project can not avoid the RCAs then this will be in direct conflict with the Forest Service Management Plan. An amendment will be needed to the Forest Service Plan if BRRTP does go through an RCA.

LADWP is currently accessing roads and spur roads and will avoid the RCAs.

Part of the RCAs is to assess the in stream sedimentation and erosion. This needs to include delineating the crane locations and expansion of existing roads. RCA widths are based on the stream type and resources that supported within each RCA.

4. ESA Section 7

The Biological Assessment will be submitted with the Draft EIS. BRRTP will also be going through Formal Consultations. USFWS agreed with this approach.

USFWS understands that multiple agencies are involved but one agency needs to take the lead. The lead agency will be responsible for terms and conditions for complying with the Biological Opinion.

USFWS is concerned with the endangered species on non-federal lands. If there is a low effect on endangered species, then a Habitat Conservation Plan (HCP) can be developed. There is a fee for filing the HCP but the process can be streamlined and takes about a year.

Protocol surveys for the desert species will not be conducted prior the Biological Assessment being submitted. Protocol surveys will be conducted prior to construction.

5. Avian Risk Assessment

USFWS has Condor GPS data that they will provide to help with the Avian Risk Assessment.

Swan diverters should be used and mid ridge will be better for the condors.

A condor fund has been set up to help purchase transmitters. This is a nonprofit conservation and tax-deductible for agencies that contribute.

USFWS contact information for condor data:

Jesse Grantham
Condor Coordinator
Hopper Mountain NWR Complex
[redacted]

Chris Barr
Deputy Project Leader
Hopper Mountain NWR Complex
[redacted]

Vanessa Gutierrez 2729

From: [redacted]
Sent: Monday, July 21, 2008 4:50 PM
To: Vanessa Gutierrez 2729
Cc: [redacted]
Subject: Re: FW: Condor Shapefile
Attachments: BRRTP Project Map wAlternatives (3-31-08).pdf; Power Engineers.zip

Vanessa,

Attached is a zip file containing GIS shapefile of all GPS records since 2005 within the area of your proposed project. Please take into consider that the data does not represents all condor activities just the small portion outfitted with GPS transmitters.

Chris

Chris Barr
Deputy Project Leader
Hopper Mountain NWR Complex
[redacted]

[redacted]

07/18/2008 08:37 AM

[redacted]
[redacted]
Subject FW: Condor Shapefile

Hi Chris,

I received your contact information from Nancy Sandburg. I'm a biologist with Power Engineers working on the proposed Barren Ridge Renewable Transmission Project (BRRTP) for the City of Los Angeles of Water and Power. BRRTP spans a distance of approximately 75 miles from the Mojave Desert south to the San Fernando Valley. The project is located within northwestern Los Angeles County and southwestern Kern County. The study area measure approximately 1,280 square miles. Within this study area several routing possibilities have been identified that traverse through the Antelope Valley, across Angeles National Forest, and public lands located in the Mojave Desert. Please refer to the enclosed map for the location of the alternatives currently being considered.

We are currently conducting an Avian Risk Assessment on all the routing possibilities. Nancy indicated that you would be able to provide GPS data for condors within our project area. Any information that you can provide that will help in our Avian Risk Assessment analysis would be appreciated.

http://www.ladwp.com/ladwp/cms/ladwp009508.jsp

Vanessa Gutierrez 2729

From:	Della K Snyder [redacted]
Sent:	Monday, July 28, 2008 11:08 AM
To:	Vanessa Gutierrez 2729
Subject:	Re: Barren Ridge Renewable Transmission Project Biology Survey Update

Thanks Vanessa. Sounds good.

[redacted]

07/28/2008 10:54 AM

To

[redacted]

cc

[redacted]

Subject

Barren Ridge Renewable Transmission Project Biology Survey Update

Ashleigh and Della,

I just wanted to send you a quick update on the progress of the survey work for BRRTP. Survey work started July 21 for the desert habitat assessment.
Crews consisting of 4 biologists walked transects along the 150 feet wide to 500 feet wide corridor as right-of-entry access is allowed. Survey crews started from the north and have completed Link A and B. They will continue surveying Link C this week. The biologists have documented natal dens, one badger den and active desert tortoise area along Link A (one live tortoise).

A team of 2 biologists have completed the detailed desert habitat assessment for Link D, E, F, G, and H. A good portion of these links consist of agriculture and/or urban environment, which restricted the survey area and species to be present. The team did a mixture of walking/driving sections and surveys were restricted to the ROW. We did not physically enter private lands.

Starting August 18 the bat surveys will start and we have an anticipated start date of September for the focused non-breeding amphibian surveys.
Also the avian risk assessment crew will be in the field for a second round of surveys during the fall migration period.

Please let me know if you have any questions or concerns.

Thank You,

Vanessa

Vanessa Gutierrez
Wildlife Biologist
[redacted]

POWER Engineers, Inc.
Energy ¡ Facilities ¡ Communications
www.powereng.com

Barren Ridge Renewable Transmission Project

California Department of Fish and Game

Contact History

Vanessa Gutierrez 2729

From: Vanessa Gutierrez 2729
Sent: Wednesday, April 02, 2008 3:59 PM
To: [redacted]
Subject: Biology contact for the Barren Ridge Renewable Transmission Project

Attachments: Project Location Map.pdf; Barren Ridge Species Table.pdf

Dan,

We spoke briefly yesterday about the Barren Ridge Renewable Transmission Project and you being the possible Department of Fish and Game contact for this project. Below is a brief description of the project and I've also attached a map and species table for you to review. The table includes all state, federal and Forest Service listed species that we've identified as potentially occurring within the project area. I'll be in contact with you in the next few days to talk about the species and confirm our list. Thank you for your prompt attention. If you have any questions or need additional information, please call me at [redacted].

The City of Los Angeles Department of Water and Power (LADWP), is proposing the Barren Ridge Renewable Transmission Project to access clean, renewable resources in the Tehachapi Mountain and Mojave Desert areas, and improve reliability and upgrade transmission capacity. The Forest Service, BLM, and LADWP will prepare a joint Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the Barren Ridge Renewable Transmission Project. The Forest Service, BLM, and LADWP have identified preliminary alternatives to the proposed project.

The Barren Ridge Renewable Transmission Project spans a distance of approximately 75 miles from the Mojave Desert south to the San Fernando Valley. The project is located within northwestern Los Angeles County and southwestern Kern County. The project study area is generally defined by the following limits: the northern boundary is the southern slopes of the Tehachapi Mountains, eastern boundary parallels State Route 14, southern boundary generally parallels the Santa Clara River, and the western boundary parallels Interstate 5. The study area measures approximately 1,280 square miles. Within this study area several routing possibilities have been identified that traverse through the Antelope Valley, across Angeles National Forest, and public lands located in the Mojave Desert. Please refer to the enclosed map for the location of the alternatives currently being considered.

Project Location Map.pdf (228 ...

Barren Ridge Species Table.pdf...

Thank You,

Vanessa

Vanessa Gutierrez
Wildlife Biologist
[redacted]

POWER Engineers, Inc.
Energy ▪ Facilities ▪ Communications
www.powereng.com

State of California - The Resources Agency ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF FISH AND GAME
http://www.dfg.ca.gov
South Coast Region
4949 Viewridge Avenue
San Diego, CA 92123
(858) 467-4201

May 9, 2008

Mr. Charles C. Holloway
Supervisor of Environmental Assessment, LADWP
c/o Power Engineers, Inc
731 E. Ball Road, Suite 100
Anaheim, CA 92805
Fax: (714) 507-2799

Notice of Preparation of a Draft Environmental Impact Report for the Barren Ridge Renewable Transmission Project Los Angeles County

Dear Mr. Holloway:

The California Department of Fish and Game (Department) has reviewed the above-referenced Notice of Preparation (NOP), for a Draft Environmental Impact Report relative to impacts to biological resources. The project proposes to access clean, renewable resources in the Tehachapi Mountain and Mojave Desert areas. Proposed work consists of construction of a 230 kilovolt (kV) transmission line from the existing Barren Ridge Switching Station to Haskell Canyon on double circuit structures; add a 230 kV circuit on existing double circuit structures from Haskell Canyon to the Castaic Power Plant; upgrade the existing Owen Gorge-Rinaldi 230 kV Transmission Line with larger capacity conductors between the Barren Ridge Switching Station and Rinaldi Substation; and construction of a new electrical switching station within Haskell Canyon near the southern boundary of the Angeles National Forest.

Biologists from Power Engineers have been coordinating with Department staff regarding potential species that may be impacted along the proposed transmission line alignments. The Department appreciates the opportunity to work with biologists early in the planning process. In general Department staff recommends that California Natural Diversity Database (CNDDB) element occurrences be used along with current sensitive species range and habitat use information to determine potential for sensitive species occurrence to be as inclusive as possible when considering potential impacts and survey needs.

The California Wildlife Action Plan, a recent Department guidance document, identified the following stressors affecting wildlife and habitats within the project area: 1) growth and development; 2) water management conflicts and degradation of aquatic ecosystems; 3) invasive species; 4) altered fire regimes; and 5) recreational pressures. The Department looks forward to working with Los Angles Department of Water and Power (LADWP) to minimize impacts to fish and wildlife resources with a focus on these stressors.

The Department recommends the development of an endowment for habitat restoration to be used in the general project area on conservation lands as mitigation for long-term impacts the project has on nesting raptors and other nesting migratory birds. Nesting birds are occasionally impacted during construction and maintenance of transmission lines. These funds would be held in an account with the California Wildlife Foundation and made available through a grant program for projects that enhance and restore nesting habitat for raptors and neotropical migrants within the general project area. The Department recommends further developing this concept with LADWP to determine the feasibility and the potential to assess mitigation. The Department understands the need to enhance our power grid for southern California, but must also address the long term impacts to wildlife resources caused by above ground transmission and distribution lines. This proposed concept will help to streamline permitting as well as ensure that impacts caused by the project are mitigated.

To enable Department staff to adequately review and comment on the proposed project we recommend the following information, where applicable, be included in the Draft Environmental Impact Report:

1. A complete, recent assessment of flora and fauna within and adjacent to the project area, with particular emphasis upon identifying endangered, threatened, and locally unique species and sensitive habitats (Attachment 1).

    a. A thorough recent assessment of rare plants and rare natural communities, following the Department's Guidelines for Assessing Impacts to Rare Plants and Rare Natural Communities.

    b. A complete, recent assessment of sensitive fish, wildlife, reptile, and amphibian species. Seasonal variations in use of the project area should also be addressed. Recent, focused, species-specific surveys, conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable, are required. Acceptable species-specific survey procedures should be developed in consultation with the Department and U.S. Fish and Wildlife Service.

    c. Rare, threatened, and endangered species to be addressed should include all those which meet the California Environmental Quality Act (CEQA) definition (see CEQA Guidelines, Section 15380).

    d. The Department's Biogeographic Data Branch in Sacramento should be contacted at (916) 322-2493 to obtain current information on any previously reported sensitive species and habitats, including Significant Natural Areas identified under Chapter 12 of the Fish and Game Code. Also, any Significant Ecological Areas SEAs) or Environmentally Sensitive Habitats (ESHs) or any areas that are considered sensitive by the local jurisdiction that are located in or adjacent to the project area must be addressed.

    e. Desert kit fox (*Vulpes macrotis arsipus*) are known to occur within portions of the project vicinity and should be included in the species analysis. The California Code of Regulations (CCR) Chapter 5 § 460 states that, "Fisher, marten, river otter, desert kit fox and red fox may not be taken at any time." We recommend that you contact the Department for guidance on take avoidance measures for the desert kit fox.

2. A thorough discussion of direct, indirect, and cumulative impacts expected to adversely affect biological resources, with specific measures to offset such impacts. This discussion should focus on maximizing avoidance, and minimizing impacts.

    a. CEQA Guidelines, Section 15125(a), direct that knowledge of the regional setting is critical to an assessment of environmental impacts and that special emphasis should be placed on resources that are rare or unique to the region.

    b. Project impacts should also be analyzed relative to their effects on off-site habitats and populations. Specifically, this should include nearby public lands, open space, adjacent natural habitats, and riparian ecosystems. Impacts to and maintenance of wildlife corridor/movement areas, including access to undisturbed habitat in adjacent areas are of concern to the Department and should be fully evaluated and provided. The analysis should also include a discussion of the potential for impacts resulting from such effects as increased vehicle traffic, outdoor artificial lighting, noise and vibration.

c. A cumulative effects analysis should be developed as described under CEQA Guidelines, Section 15130. General and specific plans, as well as past, present, and anticipated future projects, should be analyzed relative to their impacts on similar plant communities and wildlife habitats.

d. Impacts to migratory wildlife affected by the project should be fully evaluated including proposals to remove/disturb native and ornamental landscaping and other nesting habitat for native birds. Impact evaluation may also include such elements as migratory butterfly roost sites and neo-tropical bird and waterfowl stop-over and staging sites. All migratory nongame native bird species are protected by international treaty under the Federal Migratory Bird Treaty Act (MBTA) of 1918 (50 C.F.R. Section 10.13). Sections 3503, 3503.5 and 3513 of the California Fish and Game Code prohibit take of birds and their active nests, including raptors and other migratory nongame birds as listed under the MBTA.

e. Impacts to all habitats from City or County required Fuel Modification Zones (FMZ). Areas slated as mitigation for loss of habitat shall not occur within the FMZ.

f. Proposed project activities (including disturbances to vegetation) should take place outside of the breeding bird season (February 1- September 1) to avoid take (including disturbances which would cause abandonment of active nests containing eggs and/or young). If project activities cannot avoid the breeding bird season, nest surveys should be conducted and active nests should be avoided and provided with a minimum buffer as determined by a biological monitor (the Department recommends a minimum 500-foot buffer for all active raptor nests).

3. A range of alternatives should be analyzed to ensure that alternatives to the proposed project are fully considered and evaluated. A range of alternatives which avoid or otherwise minimize impacts to sensitive biological resources including wetlands/riparian habitats, alluvial scrub, coastal sage scrub, Joshua tree woodlands, etc. should be included. Specific alternative locations should also be evaluated in areas with lower resource sensitivity where appropriate.

a. Mitigation measures for project impacts to sensitive plants, animals, and habitats should emphasize evaluation and selection of alternatives which avoid or otherwise minimize project impacts. Compensation for unavoidable impacts through acquisition and protection of high quality habitat elsewhere should be addressed with offsite mitigation locations clearly identified.

b. The Department considers Rare Natural Communities as threatened habitats having both regional and local significance. Thus, these communities should be fully avoided and otherwise protected from project-related impacts (Attachment 2).

c. The Department generally does not support the use of relocation, salvage, and/or transplantation as mitigation for impacts to rare, threatened, or endangered species. Department studies have shown that these efforts are experimental in nature and largely unsuccessful.

4. A California Endangered Species Act (CESA) Permit must be obtained, if the project has the potential to result in "take" of species of plants or animals listed under CESA, either during construction or over the life of the project. CESA Permits are issued to conserve, protect, enhance, and restore State-listed threatened or endangered species and their habitats. Early consultation is encouraged, as significant modification to the proposed project and mitigation measures may be required in order to obtain a CESA Permit. Revisions to the Fish and Game Code, effective January 1998, require that the Department issue a separate CEQA document for the issuance of a CESA permit unless the project CEQA document addresses all project impacts to listed species and specifies a mitigation monitoring and reporting program that will meet the requirements of a CESA permit. For these reasons, the following information is requested:

   a. Biological mitigation monitoring and reporting proposals should be of sufficient detail and resolution to satisfy the requirements for a CESA Permit.

   b. A Department-approved Mitigation Agreement and Mitigation Plan are required for plants listed as rare under the Native Plant Protection Act.

5. The Department opposes the elimination of watercourses (including concrete channels) and/or the canalization of natural and manmade drainages or conversion to subsurface drains. All wetlands and watercourses, whether intermittent, ephemeral, or perennial, must be retained and provided with substantial setbacks which preserve the riparian and aquatic habitat values and maintain their value to on-site and off-site wildlife populations. The Department recommends a minimum natural buffer of 100 feet from the outside edge of the riparian zone on each side of a drainage.

   a. The Department requires a Streambed Alteration Agreement (SAA), pursuant to Section 1600 et seq. of the Fish and Game Code, with the applicant prior to any direct or indirect impact to a lake or stream bed, bank or channel or associated riparian resources. The Department's issuance of a SAA may be a project that is subject to CEQA. To facilitate our issuance of the Agreement when CEQA applies, the Department as a responsible agency under CEQA may consider the local jurisdiction's (Lead Agency) document for the project. To minimize additional requirements by the Department under CEQA the document should fully identify the potential impacts to the lake, stream or riparian resources and provide adequate avoidance, mitigation, monitoring and reporting commitments for issuance of the Agreement. Early consultation is recommended, since modification of the proposed project may be required to avoid or reduce impacts to fish and wildlife resources.

Thank you for this opportunity to provide comment. Please contact Mr. Dan Blankenship, Staff Environmental Scientist, [redacted] if you should have any questions and for further coordination on the proposed project.

Sincerely,

Edmund J. Pert
Regional Manager
South Coast Region

Attachments

cc: Ms. Helen Birss, Los Alamitos
Betty Courtney, Newhall
Dan Blankenship, Newhall
Terri Dickerson, Laguana Niguel
Kelly Schmoker, Glendora
Bill Loudermilk, Regional Manager, CDFG Region 4
Annette Tenneboe, CDFG Region 4
HCP-Chron Department of Fish and Game
State Clearinghouse, Sacramento

POWER ENGINEERS

MEETING MINUTES

SUBJECT:	Biology Meeting			
MEETING DATE:	05/30/08, 2pm		LOCATION:	Call in - 877-797-2663, 2710#
PROJECT NAME:	BRRTP		PROJECT #:	113807
PREPARED BY:	Vanessa Gutierrez			
TO:	LADWP	BLM	CDFG	POWER
	Charles Holloway Nadia Dale Mark Sedlacek	Linn Gum Bob Parker	Daniel Blankenship Annette Tenneboe	Mike Strand Vanessa Gutierrez Jim Jensen

ATTENDEES:

Charles Holloway, Nadia Dale, Linn Gum, Bob Parker, Daniel Blankenship, Annette Tenneboe, Mike Strand, Vanessa Gutierrez

AGENDA ITEMS:

1. **Biological Survey Needs and Schedule**

USFW has suggested a zig-zag survey approach, which would involve walking the entire area in a pattern for animal surveys in the desert areas. POWER prefers this approach to a protocol-level survey for all species of concern, although it would be limited to a 500-ft. corridor and not the protocol surveys. This method was proposed because the Project does not have a known footprint.

The project has identified alternatives for the corridors; however, BRRT does not have finalized centerlines. LADWP will be working to refine the centerline, design and tower access roads. Until this process is complete we don't have specific areas that will be impacted.

No new roads with exception of alignment that follows aqueduct. Foundation for towers will be impacts sites, have flexibility with towers and can avoid sensitive areas.

Annette (CDFG) concerned with survey approach and ability to cover all species adequately. CDFG also indicated that the approach suggested by USFWS is a detailed habitat assessment approach rather than protocol surveys.

This approach would be a detailed habitat assessment approach with the survey work consisting of walking the entire, accessible, corridor. The survey work would need to stay within the LADWP easements for the aqueduct and transmission lines.

LADWP indicated that it is 200 / 150 feet easement.

The information gathered will help verify and perfect the habitat assessment that has been completed and this survey data will be utilized in the Draft EIR and Biological Assessment.

MEETING MINUTES

CDFG agreed with the approach and indicated that during this intensive habitat assessment the Mohave ground squirrel, burrowing owl and Swainson's hawk should be included in the habitat assessment. LADWP agrees that the habitat assessment surveys should include all these species.

CDFG recommends that we look for habitat south of Highway 58 for the Mohave ground squirrel.

An avian risk assessment will also be conducted along all alignments and this survey work will start June 9.

2. Project Schedule and Future Survey Needs

LADWP anticipate that the EIR will be certified in February 2010 and construction starting in 2011. Preconstruction surveys will be done at this time.

3. CDFG Contact Information

Dan is the CDFG contact for Region 5 and Annette is the contact for Region 4. Both agree that there should one lead for the BRRT Project. Dan has indicated that he will be the lead for this project and will coordinate with Annette

ACTION ITEMS:

Item	Action	Responsibility	Due Date

Vanessa Gutierrez 2729

From: Daniel Blankenship [redacted]]
Sent: Thursday, July 10, 2008 4:26 PM
To: Vanessa Gutierrez 2729
Subject: Re: Barren Ridge Renewable Transmission Project Desert HabitatSurveys

Hi Vanessa, Hope all is going well. I have double checking with Annette and running it by Scott Harris. I will let you know asap. Thanks, Dan

>>> [redacted] 7/9/2008 8:59 AM >>>
Hi Dan,

We are gearing up to start the desert habitat assessment survey work for the Barren Ridge Renewable Transmission Project (BRRTP). I wanted to touch base with you before we start this survey work and verify that our approach is consistent with what we discussed and agreed upon during our May 30 meeting with Annette and LADWP.

POWER will conduct habitat delineation surveys for sensitive desert species along the desert portion of the BRRTP. The intent is to review a 500 feet wide corridor and walk transects along the 150 feet wide to 500 feet wide corridor as right-of-entry access is allowed. The surveys are not intended to be conducted by physically entering private lands where entry permission is not documented.

The goal of the survey will be to document any observed sensitive wildlife species and evaluate habitat for suitable characteristics to support state or federal protected species. The biologists will walk linear transects that meander through the habitat to accomplish a comprehensive cover of the survey area. It is not intended that the surveys be a 100-percent cover or include protocol level surveys. The goal will also be to accurately map quality of habitat by one-tenth mile increments for the proposed alternative project routes. The biologists will map any observed sign and potential habitat for the desert tortoise and Mohave ground squirrel that are typically active during the daylight at higher temperatures. Additionally the biologists will map any observed potential kit fox natal dens and any potential burrowing owl ground burrows. The biologists will also map clusters and some single Joshua trees and distinct ephemeral washes.

Please let me know if you have questions or concerns. We will be starting the field work July 21.

Thank You,

Vanessa

Vanessa Gutierrez
Wildlife Biologist
[redacted]

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Energy * Facilities * Communications
www.powereng.com <http://www.powereng.com/>

Vanessa Gutierrez 2729

From: Daniel Blankenship[redacted]
Sent: Tuesday, July 29, 2008 8:27 AM
To: Annette Tenneboe; Vanessa Gutierrez 2729
Cc: [redacted]; Michael Strand 2710
Subject: Re: Barren Ridge Renewable Transmission Project Biology Update

Vanessa, Thanks for the update. Sounds like you're making good progress on the surveys. Please submit NDDB observation forms for all sensitive species (let me know if you have any questions on the form). Thanks, Dan

Daniel S. Blankenship
Staff Environmental Scientist
CA Department of Fish and Game
P.O. Box 221480
Newhall, CA 91322-1480
[redacted]

>>> [redacted] 7/28/2008 10:50 AM >>>
Dan and Annette,

I just wanted to send you a quick update on the progress of the survey work for BRRTP. Survey work started July 21 for the desert habitat assessment. Crews consisting of 4 biologists walked transects along the 150 feet wide to 500 feet wide corridor as right-of-entry access is allowed. Survey crews started from the north and have completed Link A and B. They will continue surveying Link C this week. The biologists have documented natal dens, one badger den and active desert tortoise area along Link A (one live tortoise).

A team of 2 biologists have completed the detailed desert habitat assessment for Link D, E, F, G, and H. A good portion of these links consist of agriculture and/or urban environment, which restricted the survey area and species to be present. The team did a mixture of walking/driving sections and surveys were restricted to the ROW. We did not physically enter private lands.

Starting August 18 the bat surveys will start and we have an anticipated start date of September for the focused non-breeding amphibian surveys. Also the avian risk assessment crew will be in the field for a second round of surveys during the fall migration period.

Please let me know if you have any questions or concerns.

Thank You,

Vanessa

Vanessa Gutierrez
Wildlife Biologist
[redacted]

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Barren Ridge Renewable Transmission Project

United States Department of Agriculture, Forest Service
Angeles National Forest

Contact History

Vanessa Gutierrez 2729

From: Marian Kadota [redacted]
Sent: Tuesday, February 19, 2008 5:13 PM
To: [redacted]; Michael Strand 2710; Karen Cadavona 2735 [redacted]
Cc: Nancy Sandburg
Subject: Fw: BarrenRidge-Castaic Bio. surveys

Hello All
Here is the Forest Biologist's comments to the Statement of Work for the bio surveys

As you can see, there is concern about the way field survey's were described. My understanding is that SCE did complete field surveys for TRTP
- but when we meet w/ Aspen, SCE, and CPUC as a group - we can validate.
M
x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x-x
Marian Kadota
Adaptive Management Services Enterprise Team Forest Service
1072 Casitas Pass Road #288
Carpinteria, CA 93013

[redacted]x-x-x-x-x-x-x-x-x-x
----- Forwarded by Marian Kadota/R5/USDAFS on 02/19/2008 05:08 PM -----

Nancy Sandburg/R5/USDAFS
02/15/2008 12:21 PM

To
Marian Kadota/R5/USDAFS@FSNOTES
cc
Lisa A Northrop/R5/USDAFS@FSNOTES, Janet L Nickerman/R5/USDAFS@FSNOTES, Martin Dumpis/R5/USDAFS@FSNOTES
Subject
BarrenRidge-Castaic Bio. surveys

Hi Marian,

In response to the Barren Ridge-Castaic Transmission Project Sensitive Plant habitat Surveys Spring 2008 memo received yesterday on February 12, 2008, we have the following concerns with the Barren Ridge-Castaic Transmission Project proposed surveys for biological resources.

General:

1. Wildlife and botanical field surveys need to be completed for analysis within the Biological Evaluation and Biological Assessment (BEBA) and the EIR/EIS. Field surveys are not considered optional.

Note: Power Engineers stated that field surveys were "optional", and that habitat mapping will be conducted the first year, with survey work to be conducted in the second year, after completion of the draft EIR/EIS. If this action is taken, Jeopardy should be assumed for potential TES species in the BA and EIR/EIS.

2. Surveys and habitat assessments should be conducted on all alternatives. Five field days of survey time as proposed by Power Engineers is not considered sufficient for flora or fauna surveys.

POWER Engineers needs to provide the following:

Flora:

1) A vegetation map based on Sawyer-Keeler Wolf 'A Manual of California Vegetation'. This includes all including temporary roads, permanent roads, splicing stations, tower locations, staging areas, helicopter landing areas, etc. These surveys will be completed for all alternatives.

2) A floristic survey following California Native Plant Society (CNPS) Guidelines for all including temporary roads, permanent roads, splicing stations, tower locations, staging areas, helicopter landing areas, etc. These surveys will be completed for all alternatives. These guidelines can be found at the following web site: www.cnps.org/cnps/rareplants/pdf/cnps_survey_guidelines.pdf

3) USDA Forest Service TES Plant Survey Field Forms and TES Plant Element Occurrence Field Forms are needed in lieu of filling out California Natural Diversity Database (CNDDB) forms. When completed they will be returned to the Forest Botanist.

4) Protocol level surveys if any suitable habitat is present for federally listed species.

5) GPS coordinates and maps of Invasive species.

6) A final report to include

- Vegetation map of proposed route and all alternatives
- A map of any invasive species
- Completed out USDA Forest Service TES Plant Survey Field Forms and TES Plant Element Occurrence Field Forms
- A complete floristic list of all plant found during focused surveys
- Results of the surveys

Fauna:

6) USFWS and USFS protocol surveys for habitat suitable for threatened endangered and sensitive species to be conducted on all affected habitat.

7) A risk assessment for potential power line caused mortality/interference for the California condor and birds of prey for all alternatives.

8) GPS coordinates on observed TES and MIS fauna provided electronically utilizing a provided USFS (NRIS) form for all alternatives.

9) Quantitative data on habitat change (vegetative and seral communities in acres or linear area) as a result of the proposed project will be listed and used to address impacts to TES and MIS habitat and species. A BEBA based on site surveys for threatened, endangered and sensitive species on all project affected areas (BEBA template available from the ANF).

10) A management indicator species report (MIS) prior to a signed Decision memo. The MIS will include quantitative data on affected habitat, and this data will be used to assess impacts on these species (MIS template available from the ANF).

11) Within two weeks of project implementation, nesting bird surveys will be conducted at active project sites.

12) Final field survey reports to contain:

- Survey results for species
- GPS coordinates in electronic format and recorded on USFS forms for TES species
- Risk analysis on power line collisions and interference
- Habitat acres for TES and MI species to be affected by proposed alternatives and seral or type conversion expected changes

If you have any questions, please let me know.

Thanks!

Nancy Sandburg
Forest Biologist
Angeles National Forest
701 N. Santa Anita Ave.
Arcadia, CA 91006-2725
[redacted]

POWER ENGINEERS

MEETING MINUTES

SUBJECT:	BIOLOGICAL RESOURCES CONFERENCE CALL MEETING		
MEETING DATE:	02-22-2008	*LOCATION:*	Conference Call – Anaheim Office
PROJECT NAME:	BARREN RIDGE-CASTAIC TRANSMISSION LINE PROJECT	*PROJECT #:*	113807
PREPARED BY:	Nancy Abbott		
ATTENDEES:	Marian Kadota, Linn Gumm, Chuck Holloway, Nadia Dale, Mike Strand, Jim Jensen, Vanessa Gutierrez, Bob Parker, Janet Nickerman, Nancy Sandburg, Nancy Abbott		

Reconnaissance Biological Surveys

- POWER made some modifications to the Habitat Assessment work plan by removing the "optional" task. All comments from FS were not addressed, as that was the purpose of the call to discuss.
- Mike S. explained that POWER's suggested approach is to conduct the habitat assessment right away on all alternatives. This would be done using existing vegetation data that consists of FS data covering the Angeles NF and GAP data covering the remainder of the project study area. The data would be "refined" as necessary using aerial photography and by conducting field reconnaissance level surveys by biologists and botanists. These would not be focused surveys but would rather be used to check and further refine the vegetation data used to determine habitat types that would support sensitive plants or animals. If a protected plant or animal would have a potential for being within the alternative corridors, surveys methods and timeframes would be identified. From that point a determination would be made as to whether focused plant or animal surveys would be conducted during spring 2008.
- FS biologists had concern with this approach. FS suggested conducting focused sensitive plant surveys this spring (2008) on all alternatives being considered. This was their understanding from our kick off meeting. Aspen is conducting focused surveys on all alternatives for TRTP. Need this level of data to adequately determine impacts and to conduct consultation with USFWS.
- POWER explained how this process would work but there was still some concern over the approach and particularly not taking advantage of this years good rain season. Discussion over different approaches continued. Chuck said LADWP would agree to conduct the sensitive plant surveys this spring and approved the habitat assessment work plan submitted by POWER. During the habitat assessment POWER will develop a scope of work and cost estimate for conducting the focused plant surveys this spring.
- FS requests that Noxious Weed Surveys are conducted in addition to the plant surveys this year.
- Vanessa will identify the needs for the surveys and available resources.
- POWER will work with GANDA to conduct plant surveys this Spring 2008.
  - ➢ Plan to be on the ground March 15 for plant surveys and will discuss and review protocols during the March 12th contractor meeting for consistency with other SCE projects.
  - ➢ Janet identified that additional FS forms will be needed.
  - ➢ Bob indicated that West Mojave has specific survey requirements that POWER should be aware of.
- Nancy indicated, in addition to her email comments, that a risk assessment for potential power line caused mortality / interference for the California condor and birds of prey will need to be conducted.

MEETING MINUTES

- Jim identified that for this Project we are assuming presence of sensitive animal species for the DEIR/EIS if the habitat is present within our corridors.
- Marian will talk to Sara regarding the NEPA vs. CEQA process. Also concerns with Antelope/Pardee lawsuit and will send email about the 9th circuit law.

ACTION ITEMS:

1. Vanessa to set up conference call to discuss progress of the surveys (Due 2/22/08)
2. Justin and Chuck locate the GIS files of Alignments from SCE or Aspen (Due asap)
3. Marian to send email regarding Antelope/Pardee lawsuit. (Due asap)

BRRTP Biological Survey Meeting

Date: March 24, 2008
Location: Arcadia Office
Attendees: Nancy Sandburg. Marian Kadota, Vanessa Gutierrez, Mike Strand

- Amphibian Surveys : Nancy Sandburg discussed need to survey Haskell Canyon for Red Legged Frogs
- RCA's need guard structures to protect riparian/ streams of significance
  - If a "negative effect" to RCA's will require a Forest Plan Amendment
- Micro-pile foundations – need to control water used for lubricant for drilling
  - reluctant for geotech testing
  - discuss with LADWP if they will use micro pile or will the use traditional foundations

- Forest Service has a GIS form to record species locations. Nancy Sandburg will provide forms.
- Forest Service indicated that there needs to be an estimate of acres of habitat (temp./perm.) effected by project
- MIS reports if indicator species ranges are within the corridors.
  - Spotted Owl Survey
- Wildlife – the 20% sampling method will be used on the tortoise and squirrel. Need to discuss this approach with Fish and Wildlife Service
- Migrating Birds: need to prepare a risk assessment
  - Look at all nests for migrating birds
  - Need to perform pre-construction survey 1 week before construction

- I-5 pipeline
  - Currently re-burring pipes exposed from 2005 landslides
  - Forest Service may have some bio data that can be used
  - Forest to provide BA/BO to POWER

MEETING MINUTES

SUBJECT:	Biology Meeting		
MEETING DATE:	May 8, 2008	LOCATION:	LADWP Office
PROJECT NAME:	BRRTP	PROJECT #:	113807
PREPARED BY:	Vanessa Gutierrez		

TO:	LADWP	USFS	BLM	POWER
	Chuck Holloway	Marian Kadota	Linn Gum	Jim Jensen
	Mark Sedlacek	Katie VinZant		Mike Strand
	Nadia Dale			Karen Cadavona
				Vanessa Gutierrez
				Ann Howald (GANDA)

ATTENDEES:

Chuck Holloway, Nadia Dale, Katie VinZant, Vanessa Gutierrez, Ann Howald

AGENDA ITEMS:

1. **Botany Surveys**
    - FS in agreement with locations that Katie has picked to survey
    - Link J and Link I are complete.
    - The southern portion of Link G is complete
    - Link H to be completed at the end of the month (May)
    - Northern portion of G to be surveyed at the end of May

2. **Seed Collection**
    - FS – no collection of seed this year (2008)
    - Collection will need to happen pre-construction
    - Seeds need to be local and native

3. **Herbicide**
    - Herbicide treatment is more cost effective than manual
    - Chuck concerned with downstream effects
    - FS will need a defined area to recommend treatment
    - FS to look into protocol for herbicide use in the Forest
    - LADWP will look into what is currently being done for transmission maintenance

MEETING MINUTES

SUBJECT:	Biology Meeting		
MEETING DATE:	October 22, 2008	LOCATION:	USFS Arcadia Office
PROJECT NAME:	BRRTP	PROJECT #:	115244
PREPARED BY:	Vanessa Gutierrez		

TO:	LADWP	USFS	BLM	POWER
	Chuck Holloway	Cindy Whelan	Linn Gum	Jim Jensen
	Mark Sedlacek	Justin Seastrand		Mike Strand
	Nadia Dale	Nathan Sill		Karen Cadavona
		Katie VinZant		Vanessa Gutierrez

ATTENDEES:

Cindy Whelan, Nathan Sill, Chuck Holloway, Nadia Dale, Mike Strand, Jim, Jenson, Vanessa Gutierrez

AGENDA ITEMS:

1. **Biological Surveys**
   Surveys finished in September 2008, working on survey reports, reports are in draft being reviewed by POWER; Vanessa handed out survey report schedule
   a. Strand described the development of alternatives and why bio surveys were conducted this year on all segments within a 500’ width.
   b. Vanessa provided a brief overview of the biological surveys conducted for the project.
   c. Re-route around Green Valley will be dropped from consideration.

2. **Survey Reports**
   Nathan expressed some concern about the schedule and having FS staff available to review reports in November – December.

3. **Riparian Conservation Areas**
   a. Power is in the process of completing the mapping
   b. They are exclusion areas
   c. Known occurrence areas (1-mile buffer) can be reduced by identifying ridgelines that would limit or “cut off” the buffer
   d. If we have activities that disturb/remove riparian vegetation, then it would require a Plan Amendment
   e. Did the NOI include language regarding a PA? No, but not a problem as the EIS will serve as the review document for the PA and the project.
   f. Will the West Wide Corridor EIS/PA amend the Angeles Plan so it would eliminate need for a PA for the BRRTP? Unknown, we will need to look into this.

g. Need to discuss and define mitigation, including replacement for habitat loss. EIS will define the mitigation and will include estimates of acres of impact. The actual will come once the decision is made and designed and included in POD.

4. **Impact Assessment**
   a. Discussion of impact assessment; focusing on 1/10-mile impact "take-offs" as a way to document and report the impacts for all alternatives. This will be used to develop and compare the alternatives. The plan is to have a 500' "impact corridor" that will be used to identify impacts based on the resource (bio) inventory. Mitigation will be used to reduce impacts as necessary. Nathan expressed a desire from the FS to have design so impacts can be identified at a specific location. Strand explained that our methodology is developed to balance this need with the constraints of developing a transmission line. If decision is completed within the EIS, we will have a greater chance to require a supplemental to the EIS as design will change as it's developed. Our methodology is designed to balance these 2 issues, need for specific impacts vs. no design. Nathan thought this made sense. The detailed design of structures and roads will be identified prior to Notice to Proceed within the Communication Plan and POD.

5. **Ground Disturbance Analysis**
   Mike provided a brief overview.

OFF-AGENDA ITEMS:

USFWS Consultation

- No agreement in place between FS and BLM on who takes land for consultation, although the BLM has verbally agreed to take lead for private lands and thus for entire project.
- Nathan thinks the MOU states FS would take lead for Forest although this is not ideal; would rather have one agency in lead role.
- USFWS needs to agree with approach. We have had several meetings with FWS to discuss approach and they have agreed although not officially in writing or with an agreement.
- Nathan will talk with Della (USFWS) to confirm approach that one agency will take lead on the entire project.

ACTION ITEMS:

Item	Action	Responsibility	Due Date
West Wide Corridor	Investigate impact on PA for BRRTP	POWER	
USFWS Consultation	Discuss and confirm agency lead	Nathan	

Barren Ridge Renewable Transmission Project

United States Department of the Interior, Bureau of Land Management

Ridgecrest Field Office

Contact History

Vanessa Gutierrez 2729

From: [redacted]
[redacted] Monday, June 30, 2008 3:27 PM
To: Vanessa Gutierrez 2729
Cc: [redacted]
Subject: RE: BRRTP
Attachments: Nest008.JPG

Hi,
We had a nice ride down ROW road- a bit smoky though. I took a photo of these two towers- the one on the left has a nest in it (realized I'd forgotten which ones are LADWPs). Poked around underneath and didn't see any pellets like a raven would produce. Didn't see any birds, but it's good sized like a red-tailed hawk. Kind of late for nesting but we did see a redtail in the area. Did your crews see any birds?

We got UTMs (NAD 83) at:

398226
3889916

(See attached file: Nest008.JPG)

I guess we'll see you up here towards the end of July.

Robert E. Parker, Wildlife Biologist
BLM Ridgecrest Office
[redacted]

Vanessa Gutierrez 2729

From: [redacted]
Sent: Friday, August 01, 2008 3:15 PM
To: Vanessa Gutierrez 2729; [redacted]; Michael Strand 2710; Jim Jensen 6268
Cc: [redacted]
Subject: Mojave Ground Squirrel Conservation Area (MGSCA)

Hi, Vanessa, et.al.;

Just a quick line to clarify some information from Thursday's ID Team meeting with us here at the BLM.

I know there was some discussion regarding the mojave ground squirrel (MGS) and possible impacts to this project because of the existence of the MGSCA designation found within the West Mojave Plan (WEMO).

Review of the WEMO, particularly map A which shows the acres subject to the restrictions associated with the MGSCA, conclusively shows the area of interest for the BRRTP is not contained within the lands designated as MGSCA. So, while we may need to provide some information/discussion regarding the MGS, we don't have to worry about the restrictions enumerated in the WEMO placed on development within the MGSCA.

Should you have any questions regarding this matter, please contact me at your earliest convenience.

Linn Gum
Chief, Lands & Minerals
Ridgecrest Field Office
Bureau of Land Management
300 S. Richmond Road
Ridgecrest, CA 93555
[redacted]

Barren Ridge Renewable Transmission Project

Steering Committee Weekly Meetings

Biology Update/Discussion

Contact History

POWER ENGINEERS

MEETING MINUTES

SUBJECT: Steering Committee

MEETING DATE: 02-27-2008

LOCATION: Conference Call (877) 797-2663, 2710#

PROJECT NAME: Barren Ridge-Castaic Transmission Line Project

PROJECT #: 113807

PREPARED BY: Nancy Abbott

TO:

LADWP	Forest Service	BLM	POWER
Chuck Holloway	Justin Seastrand	Linn Gum	Jim Jensen
Mark Sedlacek	Marian Kadota		Michael Strand
Nadia Dale			Karen Cadavona

ATTENDEES:

LADWP: Nadia Dale, Chuck Holloway, Mark Sedlacek **FS:** Marian Kadota, Justin Seastrand, Nancy Sandberg, Janet Nickerman **BLM:** Linn Gum, Bob Parker **POWER:** Jim Jensen, Mike Strand, Karen Cadavona, Vanessa Gutierrez, Nancy Abbott **Garcia & Associates** (sub-consultants): Dave Kelly, Samantha Hillarie.

AGENDA ITEMS:

1. BIOLOGICAL RESOURCES

POWER is conducting a habitat analysis using GIS data to determine what surveys need to be conducted based on the habitat. In 2-3 weeks, POWER and Garcia & Associates will conduct field surveys where habitats are present. POWER Protocol surveys will be conducted where needed in April/May. On March 12th meeting at LADWP, biologists will discuss survey requirements.

Marian is still concerned about the EIS being too general in its biology assessment. Antelope-Pardee (A-P) is currently dealing with this problem. The CEQ group message is that an EIS supplement is needed. FS generally does more site specific analysis in comparison to the one proposed by LADWP. Chuck states that transmission lines are different than most projects since it's not confined to a small area like timber sales and are long linear projects. For transmission lines, siting only occurs when the final alignment is determined; doing siting for all alternatives is not realistic. During construction, there are site specific areas for wildlife and fauna that are not disturbed and avoided (February – August). Marian is not comfortable assuming presence and waiting for an appropriate time. From her experience, Fish & Wildlife does not like to make decisions on general assessment.

POWER will conduct a habitat assessment to narrow down areas that need to be surveyed. All Threatened & Endangered (T&E) species will be assessed on Federal Land. (Cannot conduct field surveys on private land where access is not granted.) Endangered Species Act requires an equal analysis for all alternatives. Protocol surveys need to be done even on non-Federal lands.

MEETING MINUTES

A determination will be made to do either a Section 7 or Section 10. Before the Draft EIR/EIS is published a preferred alternative will be identified.

Jim notes the two issues of A-P. (1) In the EIR/EIS no improvements were to occur in the riparian conservation areas. However, 3 towers were located in the conservation areas and could not be avoided. RCA could have an adverse affect. (2) The mid-slope changes minimized the number of tower sites, but it created longer pulling and slicing spans. Therefore, the impacts from pulling and slicing created a much greater ground disturbance.

Marian suggest a two tiered document—a general assessment and then a site specific analysis. Jim explains that a NEPA EIS decision can be made even with a general biology assessment. However, a decision does not grant a project to proceed. A ROD and all permits are required. Also, a notice to proceed with construction must be granted. All micro-siting, consultations, and protocol surveys need to be done beforehand. The ROD will also have an agreement on centerline and ROW in quarter sections.

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POWER
ENGINEERS

MEETING MINUTES

SUBJECT:	Steering Committee Wkly Conf. Call Mtg.		
MEETING DATE:	05/21/08	LOCATION:	(877) 797-2663, 2710#
PROJECT NAME:	BRRTP (Barren Ridge Renewable Transmission Project)	PROJECT #:	113807.01.01.05
PREPARED BY:	Nancy Abbott/Vanessa Gutierrez		

TO:	LADWP	Forest Service	Bureau of Land Mgmnt.	POWER
	Chuck Holloway	Marian Kadota	Linn Gum	Jim Jensen
	Nadia Dale	Justin Seastrand		Mike Strand
	Mark Sedlacek			Karen Cadavona
				Vanessa Gutierrez

ATTENDEES:

Chuck Holloway, Nadia Dale, Mark Sedlacek, Marian Kadota, Linn Gum, Jim Jensen, Vanessa Gutierrez

COMMENTS ON PREVIOUS ACTION ITEMS:

Vanessa to meet with Fish & Wildlife Service – DONE
Karen to do agenda for Purpose & Need Workshop – DONE
Power Screening Criteria – STILL BEING WORKED ON
Community Working Groups – CANCELLED

Mark S. updated the committee and City Council approved contract with POWER and currently waiting for signatures.

AGENDA ITEMS:

1. Biological Surveys

- Ashleigh Blackford of the Ventura Fish and Wildlife Office responded to POWER's request for survey protocols regarding the desert tortoise. USFWS has directed us to conduct surveys using a zigzag approach to determined suitability and incidental observations along the corridors within potential habitat. Permission has also been given to survey outside the survey period window.
- Botany crew will survey Corridor H next week (May). Amphibian, bird, avian risk assessment, desert tortoise and plants survey will be starting up again in June.
- Although a 100% survey is preferred, it cannot be done at this time due to steepness of area and extremely dense chaparral.
- FS requested that botany crews survey down slope from the SCE line on Corridor H as up slope will not be approved. Marian was in field last week and saw lilies in the corridor
- LADWP is working on getting another set of keys for the biology field crew.
- FS wants to know how alternatives are being dealt with that are going around the Green Valley area possibly outside the corridor. POWER is aware and reviewing area fire road near "roadless" area.

MEETING MINUTES

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POWER
ENGINEERS

MEETING MINUTES

SUBJECT: Steering Committee Conference Call

MEETING DATE: May 28, 2008

LOCATION: Call in – 877-797-2663, 2710#

PROJECT NAME: BRRTP

PROJECT #: 113807

PREPARED BY: Saadia Byram

TO:	LADWP	FS	BLM	POWER
	Mark Sedlacek Chuck Holloway Nadia Dale	Marian Kadota Justin Seastrand	Linn Gum	Jim Jensen Mike Strand Karen Cadavona Vanessa Gutierrez

ATTENDEES:

Nadia Dale, Marian Kadota, Linn Gum, Jim Jensen, Mike Strand, Karen Cadavona, Vanessa Gutierrez

AGENDA ITEMS:

1. Biological Surveys

- Fish and Game Meeting

  CDFG meeting scheduled for Friday, 5/30 at 2pm to clarify Desert Tortoise protocol survey due to the discrepancies between CDFG and FW. Vanessa will be sending meeting invitations to Marian and Linn. Marian states there will be no biologist available or on-call this week.

- Survey Schedule

  Botanists are currently spending two weeks along Alternative H.
  Amphibian protocol to begin 6/18
  Spotted Owl and Avian risk to begin 6/9
  The surveys will overlap during the month of June on a 2 weeks on/2 weeks off rotating schedule.

- Antelope-Pardee line alignment clarification issues

  The Antelope-Pardee alignment is off for towers 33-37. Katie made the discovery of the incorrect alignment. Marian noted that 6 towers were moved due to geotech conditions (unstable soils), and the new locations are currently staked. Should POWER identify tower locations by GIS? Marian states that the area is geologically unstable, very steep and subject to numerous landslides. The new geotech engineer okayed the new Antelope-Pardee alignment. Marian has data on the corrections but not GIS data. POWER will digitize the data based on new information from Marian and Edison. Marian believes there is a record of Edison's tower movement and boundary decisions on their website.

  POWER is attempting to clarify the northern boundary of the 1,000 ft.-wide corridor to determine whether the Edison line will need to be crossed once or twice to avoid an FS Plan Amendment for realignment. POWER will validate the 1,000 ft.-wide corridor to SCE's centerline (which is off-set by 80 ft. from the Northern boundary).

  - On the South-East side of the corridor, the Southern end of Antelope-Pardee dips straight down before the canyon. BRRPT is going directly in following the existing 69KV; not around movie sets like SCE, which is a 2 mile re-routing requirement. This is the only divergence from the Antelope-Pardee line.

- After the new pole data is delivered, the area will be re-surveyed to be South of the Antelope-Pardee line. BRRTP may end up being North or South of the Antelope-Pardee line, although the assumption is that BRRTP will be on the South side and the survey corridors will need to be adjusted to move to the South. Antelope-Pardee did not follow the Northern boundary map for the 1,000 ft.-wide corridor.

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POWER ENGINEERS

MEETING MINUTES

SUBJECT: Steering Committee Conference Call

MEETING DATE: June 11, 2008 **LOCATION:** Call in – 877-797-2663, 2710#

PROJECT NAME: BRRTP **PROJECT #:** 113807

PREPARED BY: Saadia Byram

TO:	LADWP	FS	BLM	POWER
	Mark Sedlacek	Marian Kadota	Linn Gum	Jim Jensen
	Chuck Holloway	Justin Seastrand		Mike Strand
	Nadia Dale			Karen Cadavona
				Vanessa Gutierrez

ATTENDEES:

Nadia Dale, Marian Kadota, Justin Seastrand, Linn Gum, Mike Strand, Karen Cadavona, Vanessa Gutierrez

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5. Biology Updates

Vanessa states that the bird surveys, which will be including the Green Valley re-route, are happening this week. Botany teams will be going out again next week, and amphibian surveys will occur next week. The Desert Tortoise and Mojave Ground Squirrel surveys will occur at the end of June or in early July.

Nadia has been attempting to give Vanessa more information on the SCE right-of-way. She advised to proceed with caution until a definitive confirmation to her inquiries arrives.

- Section 7 Fish & Wildlife
  Marian states that Dehla from Fish & Wildlife has contacted her. Dehla received Nadia's survey data for the California Red Legged Frog and the Arroyo Toad. Marian wonders what, since the informal consultation hasn't officially begun, is the protocol for discussing the project with Fish & Wildlife? Marian states that she discussed the project and gave Della Linn's contact information.

  Linn states that BLM has collected fees for the consultation process. There will be two Fish & Wildlife biologists for the site assessments: Ashley Blackford will be handling the desert assessment, while Della will be handling the Angeles forest amphibians, fish and condors.

  Marian requests that Vanessa call Della, and Marian will forward Della's contact information. Vanessa will confirm with Della the flow of information during this phase.

- Green Valley Re-Route
  Marian would like to discuss the Green Valley re-route and whether it is possible to push it closer to private lands. Mike stated that moving it closer to the existing alignment would move it to the top of the mountain, where it becomes a concern to private citizens. LADWP has tried to site the re-route per public comments, so the line would be behind the mountain and unseen by private properties and utilize existing roads. LADWP is not committed to the re-route, it has only responded to public comments. If FS is opposed to the re-route, it can be eliminated.

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POWER ENGINEERS

MEETING MINUTES

SUBJECT: BRRTP ID Team Meetings

MEETING DATE: July 30, 2008

LOCATION: USFS Office, Arcadia

PROJECT NAME: Barren Ridge Renewable Transmission Project

PROJECT #: 113807

PREPARED BY: Saadia Byram

TO:

LADWP	USFS	BLM	POWER
Mark Sedlacek	Marian Kadota	Linn Gum	Mike Strand
Chuck Holloway	Justin Seastrand		Karen Cadavona
Nadia Dale	Cindy Whelan		Vanessa Gutierrez
Steve Boyles	Sonja Bergdahl		Allison Carver
Gary Fernstrom	Jose Henriquez-Santos		John Paez
Jeff Owen	Paul Gregory		Jim Rudolph
Allan MacFarlane	Tom Kaucher		Mark Schaffer
Hassan Motallebi	Paul Kelley		Tom Demere
Mohammed Beshir	John Lane		Dave Kelly
Bruce Moore	Mike McCorison		Brian Marchetti
Laura Hays	Nancy Sandburg		Michael Rogers
Omar Torres	Darrell Vance		Valorie Thompson
Matt Hone	Kate VinZant		Ulises Odio
	April Garbat		Jim Jensen
	Patti Krueger		
	Marty Dumpis		
	John Capell		
	Bob Hawkins		

ATTENDEES:

Chuck Holloway, Nadia Dale, Jeff Owen, Steve Boyles, Allan MacFarlane, Bruce Moore, Laura Hays, Omar Torres, Matt Hone, Marian Kadota, Justin Seastrand, Sonja Bergdahl, José Henriquez-Santos, April Garbat, Paul Kelly, Mike McCorison, Darrell Vance, Katie VinZant, Patti Krueger, Bob Hawkins, John Capell, Marty Dumpis, Linn Gum, Mike Strand, Karen Cadavona, Vanessa Gutierrez, Allison Carver, John Paez, Jim Rudolph, Mark Schaffer, Tom Deméré, Dave Kelly, Brian Marchetti, Michael Rogers, Valorie Thompson, Ulises Odio, Jim Jensen

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c) **Biology Resources** (Vanessa Gutierrez, POWER; Dave Kelly, POWER; Nathan Sill, USFS; Katie VinZant, USFS; Patti Krueger, USFS)

Gutierrez explained that there are surveys currently being conducted for Federal, State, USFS and BLM sensitive species, as well as the mapping of the RCAs and species composition, to place appropriate buffers in sensitive areas. RCAs outside the corridors are also being identified; there is concern for downstream indirect effects and sedimentation.

There is concern about the long-term maintenance plans for the access roads and a need for a detailed restoration plan. The detailed restoration plan needs to address seed collection, invasive species, and use of herbicides and weed free materials.

The Biology team also notes the possibility of the migration and population, through the construction process, of invasive plant species. There are and will be washdown stations to try to minimize the spread of invasive plants, but some proliferation is inevitable. Any pesticides that plan to be used to control invasive species must be included in the EIS/EIR. Coordination with noxious weed personnel from the County will also be necessary.

Other areas of concern:

- Flight pathways and the avian risks they present through migration corridors
- Trash and micro-trash generated through the construction process
- Effects of construction and maintenance noise on sensitive species and riparian avian species
- Sedimentation and water quality concerns
- Expanded OHV, hunting and plant collecting access through improvement and construction of roads, and the risks that access presents to sensitive species

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APPENDIX E: DETAILED CONSTRUCTION, OPERATION, AND MAINTENANCE PROCESS

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BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

Detailed Construction, Operations and Maintenance Process

POWER ENGINEERS

BRRTP CONSTRUCTION, OPERATION AND MAINTENANCE

1.0 230 KV DOUBLE-CIRCUIT TRANSMISSION LINE

1.1 CONSTRUCTION SEQUENCE

Construction of a transmission line involves the following general sequence of events: surveying the centerline; identifying and constructing access roads; clearing right-of-way and tower sites (including construction yards and batch plants); installing foundations; assembling and erecting the towers; clearing, pulling, tensioning, and splicing sites; installing ground wires and conductors; installing counterpoise; switching station tie in; and cleanup and site reclamation. Various phases of construction would occur at different locations throughout the construction process for the Barren Ridge Renewable Transmission Project (BRRTP). This would require several contractors operating at the same time and in different locations.

The following section describes the construction components necessary for the assembly and installation of the proposed double-circuit transmission line. The description of transmission line construction sequencing and estimates for construction sites would also be relevant for the additional transmission line construction activities associated with the installation of the Castaic-Haskell Canyon #4 circuit on existing structures, and the reconductoring of the Barren Ridge – Rinaldi (BR-RIN) transmission line between the Barren Ridge Switching Station and the Rinaldi Substation.

1.1.1 Surveying Activities

The Los Angeles Department of Water and Power (LADWP) must first obtain survey permits for the portion of the Project crossing federal lands managed by the U.S. Department of Agriculture, Forest Service (USFS) and the U.S. Department of the Interior, Bureau of Land Management (BLM), and rights-of-entry for private lands. This would include the issuance of a 50-year term Special Use Permit to LADWP by the USFS and a 30-year term (renewable) Right-of-Way Grant issued by the BLM. For survey on affected private lands, LADWP would need to negotiate rights-of-entry with the local landowners. Once survey permits are obtained, construction survey work would consist of locating the centerline, tower center hubs, ROW boundaries, and tower access roads, some of which would be located outside of the ROW boundaries. Whenever possible, location of the ROW and Project facilities would be laid out to avoid identified sensitive resources. All of these activities would begin approximately one year prior to the start of construction. Cultural resources and necessary additional threatened and endangered species intensive surveys would be conducted once the survey of the centerline and access roads is completed and clearly marked.

Necessary pre-construction geotechnical investigations would include geological field mapping of each tower site, and borings by drill rig for soil sampling and bedrock corings to determine soil densities and bedrock strength. Test locations would include angle points between the Barren Ridge Switching Station and the Angeles National Forest (ANF), and five to ten locations along the selected alignment within the ANF. Seismic analysis of tower sites for slope stability would also be necessary in mountainous areas of the ANF. Existing roads would be used as much as possible, but some new roads could be required.

1.1.2 Preconstruction Weed Removal

LADWP/ANF/BLM shall prepare and implement a comprehensive, adaptive Weed Control Plan on NFS/BLM lands for pre-construction and construction invasive weed abatement. A pre-construction weed inventory shall be conducted by surveying all areas subject to ground-disturbing activity, including, but not limited to, tower pad preparation and construction areas, tower removal sites, pulling and tensioning

sites, assembly yards, and areas subject to grading for new or improved access and spur roads. In areas subject to ground disturbance, weed infestations shall be treated prior to construction according to control methods and practices for invasive weed populations designed in consultation with the USFS/BLM. The Weed Control Plan shall be updated and utilized for eradication and monitoring post construction. Weed control treatments shall include all legally permitted herbicide, manual, and mechanical methods applied with the authorization of the USFS/BLM. The application of herbicides shall be in compliance with all state and federal laws and regulations under the prescription of a Pest Control Advisor (PCA), where concurrence has been provided by the USFS/BLM, and implemented by a Licensed Qualified Applicator. Herbicides shall not be applied during or within 24 hours of a scheduled rain event. Herbicides shall not be used within Riparian Conservation Areas (RCAs) on the ANF without approval of the USFS. In riparian areas, only water-safe herbicides shall be used. Herbicides shall not be applied when wind velocities exceed six miles per hour. Where manual and/or mechanical methods are used, disposal of the plant debris will follow the regulations set by the USFS/BLM. The timing of the weed control treatment shall be determined for each plant species in consultation with the USFS/BLM (on NFS/BLM lands, respectively) with the goal of controlling populations before they start producing seeds.

1.1.3 Construction of Access Roads

The construction, operation, and maintenance of the proposed transmission line would require that heavy vehicles access tower sites along the right-of-way. Where new access roads are required, they would be constructed to support the weight of these vehicles and would typically be 16 feet wide, consisting of a 14-foot driving surface with a side drainage system between one and two feet in width. Permanent roads would be constructed where necessary for operation or maintenance, or where it is required by the landowner or land managing agency. Road standards would be addressed specifically in the Construction, Operation, and Maintenance Plan (COM Plan) and the Plan of Development (POD) during the engineering phase of the Project, and prior to a Notice to Proceed from the USFS and BLM.

Dependent upon final design and mitigation, some temporary access roads may be constructed as part of the Project. These would typically be 16 foot wide roads, but would typically have no improved ditch drainage systems. Most temporary roads would be constructed by crushing vegetation. In some areas, material and topsoil from the temporary roads would be bladed to one or both sides to facilitate rehabilitation. Following construction, bladed material can be re-spread across the disturbed road section. Seeds and roots contained within the re-spread topsoil layer normally provide a natural source for new growth.

Existing paved and unpaved highways and roads would be used where possible. Roads along existing utility corridors would also be used where possible to minimize new access road construction. In locations where existing roads can be used that are located in close proximity to the proposed centerline of the transmission line, only spur roads to the tower sites would be required. New access roads and spur roads would likely be constructed into the right-of-way where existing roads do not exist. Table 1 lists the estimated ground disturbance of access and spur roads based on terrain.

TABLE 1. ACCESS AND SPUR ROAD GROUND DISTURBANCE ESTIMATES

Ground Disturbance Categories	Access Roads		Spur Roads (average width 16 feet)	
	Average Miles of Roads Per Mile of Transmission Line	Average Acres of Disturbance Per Mile of Transmission Line*	Average Miles of Roads Per Mile of Transmission Line	Average Acres of Disturbance Per Mile of Transmission Line
1. Existing roads or agricultural land; no widening anticipated	n/a	n/a	0.3	0.6
2. Existing 8 ft wide roads that require an additional 8 ft of widening	1.0 to 2.5	Permanent 0.9 to 2.4	0.3	0.6
3. Construct new road on flat terrain (0-10%)	1.0 to 2.5	Permanent 1.9 to 4.8	0.3	0.6
4. Construct new road on sloping terrain (10-20%)[1]	2.5 to 4.0	Temporary 7.3 to 11.6 Permanent 4.8 to 7.7	0.5	1.0
5. Construct new road on steep terrain (20-30%)[1, 2]	4.0 to 6.0	Temporary 23.3 to 34.9 Permanent 7.7 to 11.6	0.8	1.6
6. Construct road on very steep terrain (greater than 30%)[1, 2]	6.0 to 8.0	Temporary 69.8 to 93.1 Permanent 11.6 to 15.5	1.0	1.9

[1] After construction of the transmission line, all access roads in Categories 4 through 6 would be restored back to 16 feet wide.
[2] On steep terrain (approximately 25% or higher) with limited access on the Angeles National Forest, the USFS may require Helicopter Mitigation.

Wherever possible, roads would be built at right angles to streams and washes. Culverts or other drainage structures would be installed as necessary across drainages, but the roads would usually follow the natural grade. In addition, road construction would include dust-control and erosion control measures in sensitive areas. All existing roads would be left in a condition equal to or better than their condition prior to the construction of the transmission line without changing their service level. Gates would be installed where required at fenced property lines to restrict general vehicular access from or to the right-of-way. Where identified within the environmental studies for mitigation purposes, access roads may be excluded or limited within specific sensitive areas, such as Riparian Conservation Areas (RCAs) on the Angeles National Forest.

1.1.4 Clearing Right-of-Way

The clearing of some natural vegetation may be required. However, selective clearing would be performed only when necessary to provide for surveying, electrical safety clearances, line reliability, and maintenance. Trimming or removal of mature vegetation, under or near the conductors, would be done to provide adequate electrical clearance as required by the National Electrical Safety Code, the North American Electrical Reliability Corporation, and California Public Utilities Commission General Order 95 standards.

Trees that could fall onto the lines or affect lines during wind-induced line swing would be removed. Normal clearing procedures are to top or remove large trees and not disturb smaller trees. Where there is a direct conflict between trees and clearance standards, the removal of trees would be jointly reviewed and agreed upon between LADWP and the owners or managers of the property. Rights-of-way would not be chemically treated unless necessary to comply with requirements of a permitting agency. On National Forest System (NFS) lands, approved herbicides would be utilized within the Project area on select invasive plant species. Invasive plant surveys and control would continue for the life of the Project.

1.1.5 Tower Site Clearing

After access roads are developed, preparation of individual structure sites would be required to install the structures. At tower locations, work areas of up to 200 feet squared in flat terrain and up to 200 by 250 feet in areas with slopes greater than eight percent may be needed. Within the work areas, at some tower locations, a level cleared area (pad) may be necessary to complete the construction of the towers. However, many tower sites would be considerably smaller depending on the size of the tower, the terrain, resource considerations, and whether helicopter construction was used, among other factors. The work area would be required for the location of tower footings, assembly of the tower, and the necessary crane maneuvers. Vegetation would be mostly crushed, and cleared only when necessary. All pads not needed for normal transmission line maintenance would be graded to blend as near as possible with the natural contours, and revegetated where required by a permitting agency. See Table 2 for tower specifications and Table 5 for estimated temporary and permanent ground disturbance associated with the double-circuit steel lattice towers.

TABLE 2. DOUBLE-CIRCUIT STEEL LATTICE TOWER SPECIFICATIONS

Tower Placement Details	Specifications	
	Categories 1 through 3 Flat (0 – 10% slope)	Categories 4 through 6 Mountainous (10 – 30% slope)
Towers per mile	±5	±5
Average span length	1,100 ft.	1,000 ft.
Average height Ground to lowest attachment	115 ft.	105 ft.
Upper body height	52 ft.	52 ft.
Overall tower height	167 ft.	157 ft.
Typical range of heights of new towers	120 – 195 ft.	110 – 185 ft.

1.1.6 Staging Areas and Batch Plants

It is anticipated that one or two construction yards or staging areas would be required for materials storage, construction equipment, construction vehicles, and temporary construction offices. Staging areas would be approximately five acres in size, and located centrally or near each end of the transmission line route. The staging areas would be located on previously disturbed private land and would be level and surfaced with crushed aggregate base. The LADWP would negotiate with landowners for specific locations of the staging areas.

Concrete for use in constructing foundations would be dispensed from a portable concrete batch plant located at approximately 15 mile intervals. A rubber-tired flatbed truck and tractor would be used to relocate each plant along the right-of-way. Commercial ready-mix concrete would be used when access to tower construction sites is economically feasible.

The construction yards and batch plants would be located on private land and serve as field offices, reporting locations for workers, parking space for vehicles and equipment, sites for material storage, and stations for equipment maintenance. Facilities would be fenced and their gates locked. Security guards would be stationed where needed. See Table 3 for estimated ground disturbance associated with the staging sites and batch plants.

TABLE 3. STAGING SITES AND BATCH PLANT GROUND DISTURBANCE ESTIMATES

Disturbance Description	**Categories 1 through 3 Flat (0 – 10% slope)***	
	Maximum Estimated Disturbance Dimension per site	**Average Disturbance**
Material staging sites (2 sites)	400 x 540 ft. (5 acres)	N/A
Concrete batch plants (3 sites maximum)	2 acres, 30 mile haul distance	0.2 acre per mile
Total Average Disturbance	**0.2 acre per mile**	

*Material staging sites and concrete batch plants would not be built on terrain above 10% slope.

1.1.7 Foundation Installation

Tower foundations for the lattice structures would consist of drilled concrete piers. The foundation process would start with the boring of four holes for each lattice structure or one hole for each TSP. The holes would be bored using truck- or track-mounted excavators with various diameter augers to match diameter and depth requirements of the foundation sizes.

For a typical suspension lattice tower, each hole would typically be four feet in diameter and 25 feet deep, depending on soil conditions. For the larger angle or dead-end structures, foundations could be up to 30 or more feet deep, depending on soil conditions. Each foundation would extend above the ground line between six inches and four feet. In extremely sandy areas, soil stabilization by water or a gelling agent may be used prior to excavation. Refer to Figure 1 and Figure 2 for typical foundation details for double-circuit towers.

Following excavation of the foundation holes, each footing would be constructed by placing formwork, reinforcing steel and a tower stub into the foundation hole, positioning the stub, and encasing it in concrete. Reinforcing steel cages would be assembled at laydown yards and delivered to each structure location by flatbed truck. Spoil material would be spread around the tower site and used for fill where suitable. The foundation excavation and installation would require access to the site by a power auger or drill, a crane, material trucks, and ready-mix trucks. Typical suspension structures would require approximately 25 to 40 cubic yards of concrete and dead-end structures would require approximately 120 cubic yards of concrete.

FIGURE 1. TYPICAL FOUNDATION DESIGN FOR THE DOUBLE-CIRCUIT STEEL LATTICE TOWERS

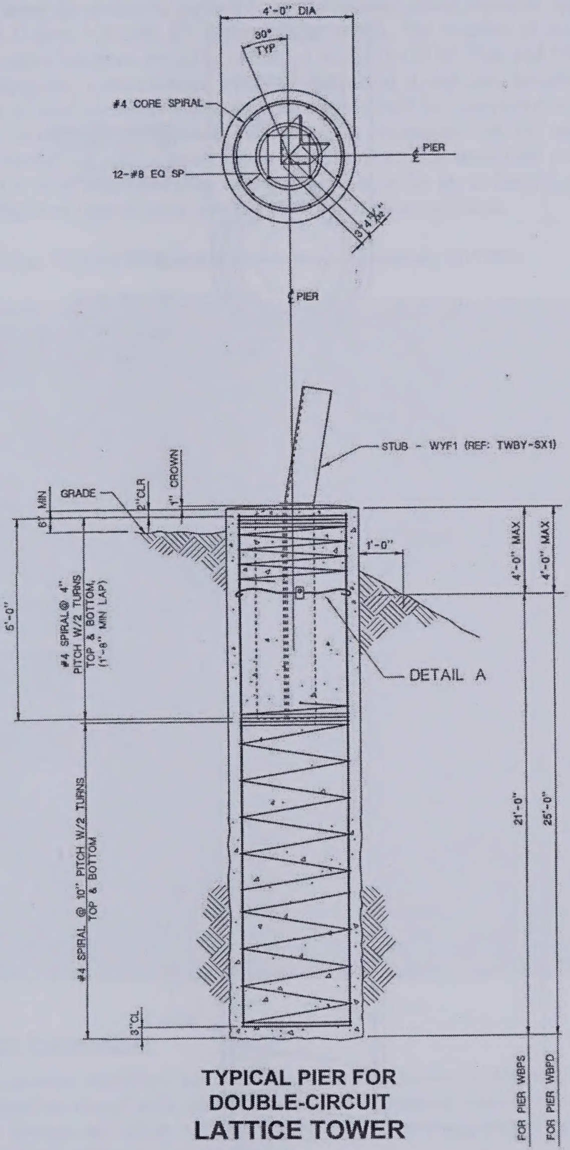
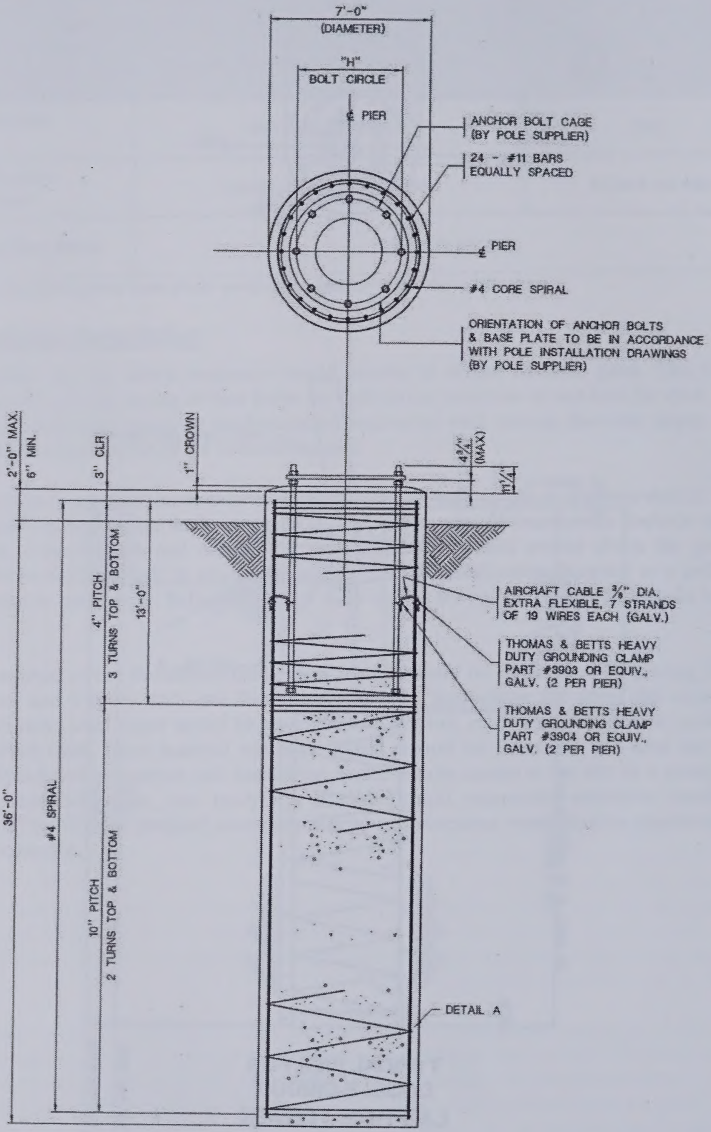

4'-0" DIA
30° TYP
#4 CORE SPIRAL
12-#8 EQ SP
℄ PIER
3" 4 13/32"
℄ PIER
STUB - WYF1 (REF: TWBY-SX1)
GRADE
6" MIN
2"CLR
1" CROWN
5'-0"
#4 SPIRAL @ 4" PITCH W/2 TURNS TOP & BOTTOM, (1'-8" MIN LAP)
1'-0"
DETAIL A
4'-0" MAX
4'-0" MAX
#4 SPIRAL @ 10" PITCH W/2 TURNS TOP & BOTTOM
21'-0"
25'-0"
3"CL
TYPICAL PIER FOR DOUBLE-CIRCUIT LATTICE TOWER
FOR PIER WBPS
FOR PIER WBPD

FIGURE 2. TYPICAL FOUNDATION DESIGN FOR TUBULAR STEEL POLES

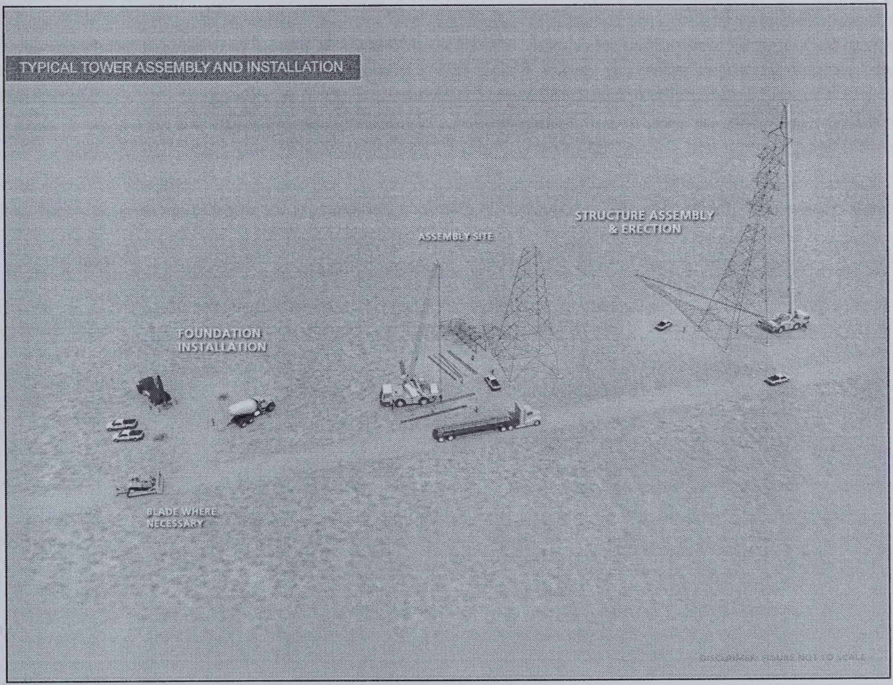

7'-0"
(DIAMETER)
"H"
BOLT CIRCLE
℄ PIER
ANCHOR BOLT CAGE (BY POLE SUPPLIER)
24 - #11 BARS EQUALLY SPACED
℄ PIER
#4 CORE SPIRAL
ORIENTATION OF ANCHOR BOLTS & BASE PLATE TO BE IN ACCORDANCE WITH POLE INSTALLATION DRAWINGS (BY POLE SUPPLIER)
2'-0" MAX.
6" MIN.
3" CLR
1" CROWN
4¾" (MAX)
1¼"
4" PITCH
3 TURNS TOP & BOTTOM
13'-0"
AIRCRAFT CABLE ⅜" DIA. EXTRA FLEXIBLE, 7 STRANDS OF 19 WIRES EACH (GALV.)
THOMAS & BETTS HEAVY DUTY GROUNDING CLAMP PART #3903 OR EQUIV., GALV. (2 PER PIER)
THOMAS & BETTS HEAVY DUTY GROUNDING CLAMP PART #3904 OR EQUIV., GALV. (2 PER PIER)
36'-0"
#4 SPIRAL
10" PITCH
2 TURNS TOP & BOTTOM
DETAIL A

TYPICAL PIER FOR
DOUBLE-CIRCUIT
POLE

1.1.8 Tower Assembly and Installation

The size of the work areas for structures (assembly and installation sites) would be approximately 40,000 to 50,000 square feet (1 acre = 43,560 ft^2) depending on terrain. The location of these sites has not yet been determined, but exact locations would be identified within the COM Plan and POD prior to a Notice to Proceed from the agencies. Lattice towers would be assembled at each site, installed and bolted to the foundations. Bundles of steel members and associated parts would be transported to each tower site by truck. Steel members would be assembled into subsections of convenient size and weight on the ground. Assembly would be facilitated with a small rough-terrain crane. The assembled subsections would be erected into place by a large crane and then fastened together in the air to form a complete tower. See Figure 3 for an illustration of typical tower assembly and installation activities.

FIGURE 3. TYPICAL TOWER ASSEMBLY AND INSTALLATION ACTIVITIES


TYPICAL TOWER ASSEMBLY AND INSTALLATION
STRUCTURE ASSEMBLY & ERECTION
ASSEMBLY SITE
FOUNDATION INSTALLATION
BLADE WHERE NECESSARY
DISCLAIMER: FIGURE NOT TO SCALE

1.1.9 Conductor Installation

After the towers are erected, insulators, hardware, and stringing sheaves would be delivered to each tower site. The towers would be rigged with insulator strings and stringing sheaves at each ground wire and conductor position. Sheaves are rollers, temporarily attached to the lower end of the insulators that allow the conductor to be pulled, or "strung," along the line.

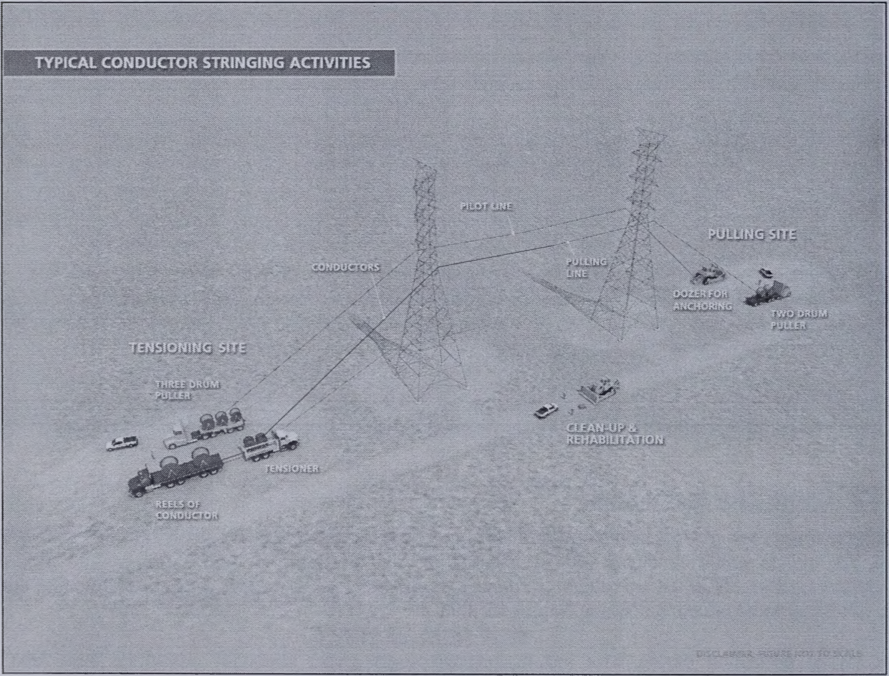
For public protection during wire installation, temporary guard structures would be built next to highways, railroads, power lines, structures, and other major obstacles. Guard structures would consist of

H-frame poles placed on either side of an obstacle. These structures would prevent ground wire, conductor, or equipment from falling on an obstacle. Equipment for installing guard structures would include augers, line trucks, pole trailers, and cranes. A guard structure would be anticipated to be necessary every five miles. The amount of ground disturbance would typically be 200 feet by 300 feet. The guard structures would be left in place until conductors and ground wires were strung, tensioned and clipped; this time frame would be approximately three weeks or longer depending on conditions. Guard structures may not be necessary for small roads. In such cases, other safety measures, such as barriers, flagmen, or other traffic control, would be used.

Pilot lines would be pulled (strung) from tower to tower by a helicopter and threaded through the stringing sheaves at each tower. The pilot line can be used to pull in the ground wire, but is used to pull in a larger-diameter, stronger pulling line for the conductor. The larger-diameter, stronger line—pulling line—would be attached to the conductors to pull them onto towers. This process would be repeated until the ground wire or conductor is pulled through all sheaves. Bundled conductors would be pulled together with the assistance of a running board. The running board attaches the bundled conductor to the pulling line.

Ground wire and conductors would be strung using powered pulling equipment at one end and powered braking or tensioning equipment at the other end of a conductor segment as shown on Figure 4. Sites for tensioning equipment and pulling equipment would be approximately 2.5 miles apart.

FIGURE 4. TYPICAL CONDUCTOR STRINGING ACTIVITIES


TYPICAL CONDUCTOR STRINGING ACTIVITIES
PILOT LINE
PULLING SITE
CONDUCTORS
PULLING LINE
DOZER FOR ANCHORING
TWO DRUM PULLER
TENSIONING SITE
THREE DRUM PULLER
CLEAN-UP & REHABILITATION
TENSIONER
REELS OF CONDUCTOR
DISCLAIMER: FIGURE NOT TO SCALE

To the greatest extent practical, pulling and tensioning sites would be located within the transmission ROW. However, some pulling and tensioning sites may occur outside the ROW. The tensioning and pulling sites could be as large as 200 feet by 500 feet, however they would be limited in size depending on each specific location and what is reasonable for safe construction practices. The size of each site would be limited as much as possible and would be designed in coordination with the responsible property owner or land management agency. Depending on topography, some grading may be required at pulling and tensioning sites to create level pads for equipment. Tensioners, line trucks, wire trailers, and tractors needed for stringing and anchoring the ground wire or conductor would be located at the tensioning sites. A puller, line trucks, sag cat and tractors would be needed for pulling and temporarily anchoring the ground wire and conductor. Table 5 includes ground disturbance estimates for conductor installation (helicopter fly yards, portable helicopter landing pads, pulling and stringing sites, and sleeving and stringing operations).

After installing the conductor ground wire or fiber optic shield wire, sagging, clipping and dead-ending activities, terminating the conductors at dead-end structures, would be performed. This process would involve adjusting the position of the conductors and shield wires, removing stringing sheaves, and permanently attaching the conductor to the insulators with specialized hardware.

1.1.10 Counterpoise Installation and Grounding Practices

Part of standard construction practice prior to wire installation would involve measuring the resistance of tower footings and installation of counterpoise (grounds) as needed. To determine if a tower would require counterpoise, ground resistance measurements would be taken at towers sites after the installation of the foundations and structures. The measurements would be evaluated to determine the numbers and locations of structures requiring counterpoise. If the resistance to remote earth for each transmission tower is greater than 10 ohms, counterpoise (grounds) would be installed to lower the resistance to 10 ohms or less. Counterpoise would consist of a bare copper-clad or galvanized steel cable buried a minimum of 12 inches deep, extending horizontally from one or more tower legs for approximately 200 feet. Typical counterpoise installation would include two installations per structure on opposite tower legs. Four installations per tower could be required in certain circumstances.

In addition to counterpoise installation, standard grounding practices during construction would include both temporary and permanent grounding of equipment and structures, such as fences or pipelines, as necessary to reduce any potential magnetically induced voltages to harmless levels. Such practices could include electrical isolation of equipment or structures and the installation of grounding wires.

1.1.11 Switching Station Tie-in

At the proposed Haskell Canyon Switching Station, the transmission lines would be connected into and out of the switching station through dedicated station structures within the switching station, commonly referred to as "bus."

1.2 UPKEEP OF CONSTRUCTION SITES

Construction sites, material storage yards, and access roads would be kept in an orderly condition throughout the construction period. Refuse and trash would be removed from the sites and disposed of in an approved manner. Oils and fuels would not be dumped along the line. Oils or chemicals would be hauled to a disposal facility authorized to accept such materials. No open burning of construction trash would occur without agency approval.

Microtrash would be cleaned daily from all work areas within known California condor habitat. Microtrash is a term used to describe small bits of debris like bottle caps, rags, screws, bolts, wires, glass, and other materials found in condor habitat.

1.3 HAZARDOUS MATERIALS WITHIN THE PROJECT AREA

Petroleum products such as gasoline, diesel fuel, helicopter fuel, crankcase oil, lubricants, and cleaning solvents would be present within the Project area during construction. These products would be used to fuel, lubricate, and clean vehicles and equipment. These products would be containerized by fuel trucks or by approved containers. When not in use, hazardous materials would be properly stored to prevent drainage or accidents.

Hazardous materials would not be drained onto the ground or into streams or drainage areas. Totally enclosed containment shall be provided for all trash. All construction waste including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials would be removed to a disposal facility authorized to accept such materials.

All construction, operation, and maintenance activities would comply with all applicable federal, state, and local laws and regulations regarding the use of hazardous substances.

The construction or maintenance crew foreman would insure that all applicable laws are obeyed. In addition, an on-site inspector would be present during construction to make sure that all hazardous materials are used and stored properly. A health and safety plan would be developed as part of the COM Plan and POD during the engineering and preconstruction phase of the Project.

1.4 SITE RECLAMATION

The ROW, including temporary construction sites, and any temporary ground disturbance outside of the ROW that may have been caused during or due to the construction of the Project (e.g., temporary access roads, staging sites, assembly yards) would be restored as required by the property owner or land management agency. All practical means would be used to restore the land to its original contour and to restore natural drainage patterns along the ROW. Because revegetation would be difficult in many areas of the Project where precipitation is minimal, it would be important to minimize disturbance during construction. All practical means would be used to increase the chances of vegetation reestablishment in disturbed areas.

The total construction period would be approximately two years. The COM Plan that would be completed during the engineering and preconstruction phase of the Project would address specific site reclamation of all disturbed areas.

1.5 FIRE PROTECTION

A Fire Management Plan would be developed for the Project and all applicable fire laws and regulations would be observed during the construction period. All personnel would be advised of their responsibilities under the applicable fire laws and regulations, including taking practical measures to report and suppress fires.

1.6 CONSTRUCTION MONITORING

An approved compliance program would be developed to address mitigation requirements associated with the avoidance of sensitive plant and animal species, cultural sites, or other sensitive features located

within or adjacent to the Project. Prior to construction, these measures will be described in detail and included in the POD.

1.7 THREE-CIRCUIT TOWER MITIGATION

A temporary transmission line would be constructed to keep the BR-RIN circuit energized during construction of the three-circuit towers. After the temporary line is constructed, the existing BR-RIN single-circuit towers would be removed to allow the new three-circuit towers to be constructed within the existing ROW. Once construction of the three-circuit towers is completed, the temporary transmission line would be removed.

The temporary transmission line would be 7.5 miles long and would consist of wood and steel single poles with an average height of 95 feet, a 3-foot by 3-foot footprint, and an average of eight poles per mile. Construction would occur within a temporary 80- to 100-foot ROW. Refer to Table 4 for specifications and to Table 5 for ground disturbance estimates. The majority of the temporary transmission line would be constructed along San Francisquito Road. Portions would also be constructed along Elizabeth Lake Road and Johnson Road. Pole placement would be adjacent to public roadways wherever possible. If necessary, temporary ROW on private property would be needed where poles could not be placed within public road ROW. The majority of poles would be direct-embedded when set in place and would not require a permanent foundation. Where additional strength is necessary at larger angle points, steel poles would be required, which could require an excavation approximately 6 feet in diameter by 20 feet deep to accommodate the concrete pier foundation that would be cast in place. Once all the poles have been constructed and the conductor installed, the existing BR-RIN circuit would be connected into the temporary line and energized. The construction would require establishment of a staging area, work areas around poles, and pull and tension sites. Access to pole sites and pull and tension sites would be from the adjacent roadways.

Approximately seven miles of the existing BR-RIN single-circuit towers would be removed, with existing ROW utilized to access the existing towers. The new three-circuit towers would be placed within the existing ROW, utilizing existing access roads. Helicopter Mitigation, as described in this section below, would be applied in steeper terrain crossing the Angeles National Forest if additional access is required. If additional access roads, considered to be longer than 300 feet, are necessary, specific locations and construction method (either helicopter or conventional) would be coordinated with the USFS. The new three-circuit tower would require a 25-foot by 30-foot structure footprint and an average of seven structures per mile; the average structure height would be 170 feet, with a maximum tower-to-tower span length of 780 feet. Structures would be installed in the same locations as the existing BR-RIN structures within the limits of standard tower design. The construction process for the new three-circuit towers would be the same as the double-circuit towers discussed above. After completion of construction of the three-circuit towers, the temporary transmission line would be removed and all temporary staging and work area land disturbances would be restored as close to previous conditions as possible and revegetated as required. Restoration practices would be consistent with Section 1.11 Decommissioning of Transmission Lines.

TABLE 4. THREE-CIRCUIT TOWER SPECIFICATIONS

Tower Placement Details	Specifications	
	Triple-Circuit	Temporary Transmission Line
ROW acquisition	None (within existing)	80-100 ft
Structures per Mile	7	8
Average span length	750 ft	650 ft

Tower Placement Details	Specifications	
	Triple-Circuit	Temporary Transmission Line
Average height (ft) Ground to lowest attachment	120	60
Upper body height	50	45
Overall tower height	170	105
Typical range of heights of new towers	150 - 180 ft.	95 - 105 ft.

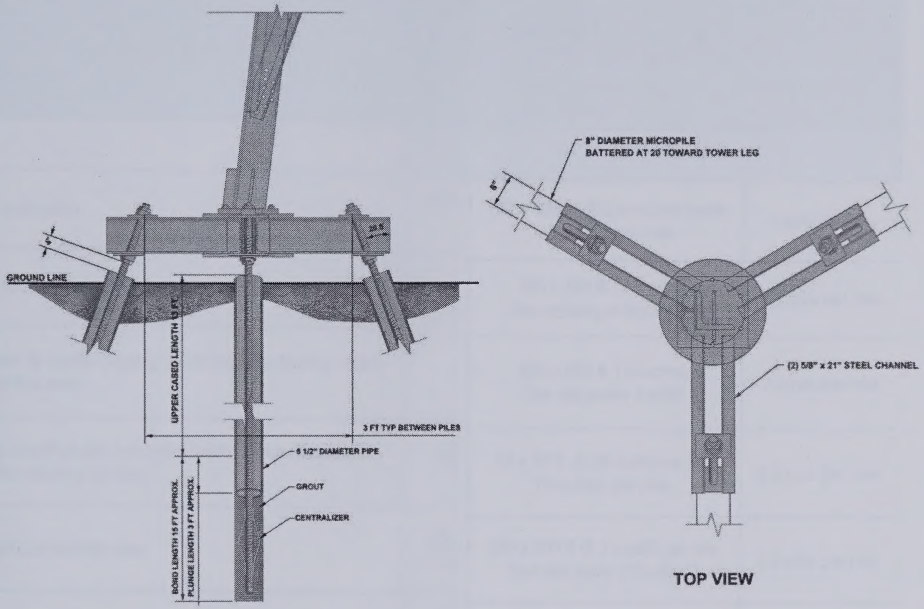
1.8 HELICOPTER MITIGATION

The following sites and ground disturbing construction activities would be required to construct the new transmission line within the identified helicopter construction areas: portable landing pads, helicopter fly yards/staging areas and associated temporary access roads, tower structure vegetation clearing, guard structures at major crossings, and access road pullouts. Refer to Table 5 for ground disturbance estimates for the Helicopter Mitigation.

The transmission line materials (tower steel, conductor reels, structure hardware, etc.) would be delivered by truck to the helicopter fly yards/staging areas. Vegetation clearing may be required at these sites to ensure safe working conditions. The fly yards/staging areas would serve as helicopter support yards for fueling and maintenance, as well as for the transport of materials and personnel. Towers may also be assembled in sections at these yards prior to delivery to the tower sites. Heavy lift helicopters would then fly the towers from the yards to the tower sites.

Portable landing pads would be located at each tower site. These pads would allow helicopters to load and unload personnel, tools, and equipment necessary for construction of foundations and assembly of tower structures. Helicopter-constructed towers that would not be in close proximity to existing access roads would utilize micropile foundations. For each tower leg, micropile foundations would use a group of three to eight 6- to 9-inch diameter casings that would be drilled and grouted into the ground. The exposed portion of the pile group would be encased in a reinforced concrete cap from the top of the casings to a depth anywhere from one to eight feet below the ground surface, depending on the terrain. Figure 5 illustrates the plan view and sections of a micropile foundation.

FIGURE 5. MICROPILE FOUNDATION


20.5
6"
GROUND LINE
UPPER CASED LENGTH 13 FT.
3 FT TYP BETWEEN PILES
5 1/2" DIAMETER PIPE
GROUT
CENTRALIZER
BOND LENGTH 15 FT APPROX.
PLUNGE LENGTH 3 FT APPROX.
8" DIAMETER MICROPILE
BATTERED AT 20 TOWARD TOWER LEG
8"
(2) 5/8" x 21" STEEL CHANNEL

TOP VIEW

LATTICE TOWER LEG
SUPPORT

Conductor installation would proceed as for double-circuit tower installation. The equipment necessary for conductor installation would be large, heavy construction equipment that could only be brought in by truck. Some NFS roads could need maintenance or improvement to allow pulling and tensioning, but no new access or spur roads would be created for conductor installation on the helicopter-constructed towers.

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TABLE 5 GROUND DISTURBANCE ESTIMATES FOR THE PROPOSED 230 KV DOUBLE-CIRCUIT TRANSMISSION LINE

Disturbance Description	Double-Circuit Steel Lattice Towers with Helicopter Stringing of Conductors		Three-Circuit Tower Mitigation (Three-Circuit Steel Lattice Towers with Helicopter Stringing of Conductors)				Helicopter Mitigation (Steel Lattice Towers with Helicopter Installation of Towers and Conductors)	
			Three-Circuit		Temporary Transmission Line			
	Estimated Disturbance Dimension	Average Disturbance	Estimated Disturbance Dimension	Average Disturbance	Estimated Disturbance Dimension	Average Disturbance	Estimated Disturbance Dimension	Average Disturbance
	Temporary Disturbance During Installation							
Tower installation	200 x 200 ft. (0.9 acre) per tower ±5 towers per mile[1]	4.6 acres per mile	200 x 200 ft. (0.9 acre) per tower ±7 towers per mile	6.4 acres per mile	50 X 100 ft. (0.1 acre) per tower ±8 towers per mile	0.9 acre per mile	100 x 100 ft. (0.2 acre) per tower ±5 towers per mile	1 acre per mile
Guard structures at major crossings	200 x 300 ft. (1.4 acres) One crossing every 5 miles	0.3 acre per mile	200 x 300 ft. (1.4 acres) One crossing every 5 miles	0.3 acre per mile	40 X 100 ft. (0.09 acres) One crossing every 5 miles	0.02 acre per mile	200 x 300 ft. (1.3 acres) One crossing every 5 miles	0.3 acre per mile
Helicopter fly yards / staging areas (includes fueling station at one of the sites)	200 x 200 ft(0.9 acre) One site every 5 miles	0.2 acre per mile	200 x 200 ft (0.9 acre) One site every 5 miles	0.2 acre per mile	200 x 200 ft (0.9 acre) One site every 5 miles	0.2 acre per mile	650 x 650 ft. (10 acres) One site every 5 miles	2 acres per mile
Landing area/Portable helicopter landing pads (includes vegetation clearing for site)	50 x 50 ft(0.06 acre) per site One site every 3.5 miles	0.02 acre per mile	50 x 50 ft (0.06 acre) per site One site every 3.5 miles	0.02 acre per mile	50 x 50 ft (0.06 acre) per site One site every 3.5 miles	0.02 acre per mile	50 x 50 ft. (0.06 acre) per site Five sites per mile	0.3 acre per mile
Pulling and tensioning sites	200 x 500 ft (2.3 acres) per site One site every 2.5 miles[2]	0.9 acre per mile	200 x 500 ft (2.3 acres) per site One site every 2.5 miles**	0.9 acre per mile	200 x 500 ft (2.3 acres) per site One site every 2.5 miles**	0.9 acre per mile	200 x 500 ft (2.3 acres) per site One site every 2.5 miles**	0.9 acre per mile
Sleeving and miscellaneous stringing operations	100 x 200 ft. (0.5 acre) per site One site every 2.5 miles	0.2 acre per mile	100 x 200 ft. (0.5 acre) per site One site every 2.5 miles	0.2 acre per mile	50 x 100 ft (0.1 acres) per site One site every 2.5 miles	0.05 acre per mile	100 x 200 ft. (0.5 acre) per site One site every 2.5 miles	0.2 acre per mile
Total Average Temporary Disturbance[3]	**6.2 acres per mile**		**8 acres per mile**		**2.1 acres per mile**		**3.7 acres per mile**	
	Permanent Disturbance							
Tower sites, including vegetation clearance within a 10-foot radius around base of towers in accordance with state law	60 X 60 ft (0.08 acres) ±5 towers per mile	0.2 acre per mile	45 x 50 ft. (0.05 acre) ±7 towers per mile	0.14 acre per mile	N/A	N/A	60 x 60 ft. (0.08 acre) ±5 towers per mile	0.2 acre per mile
Total Average Permanent Disturbance[4]	**0.2 acre per mile**		**0.14 acre per mile**		**N/A**		**0.2 acre per mile**	

Information based on LADWP and POWER Engineers, Inc. estimates. Actual disturbance areas may be smaller based on final engineering design.

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[1] For slopes over 10% (ground disturbance categories 4-6), site dimensions would be 200 x 250 ft. (1.2 acres) and have an average disturbance of 5.8 acres per mile.
[2] For slopes over 10% (ground disturbance categories 4-6), sites would be every 2 miles and have an average disturbance of 1.2 acres per mile.
[3] Access and spur road disturbances included in Table 1.
[4] Ibid.

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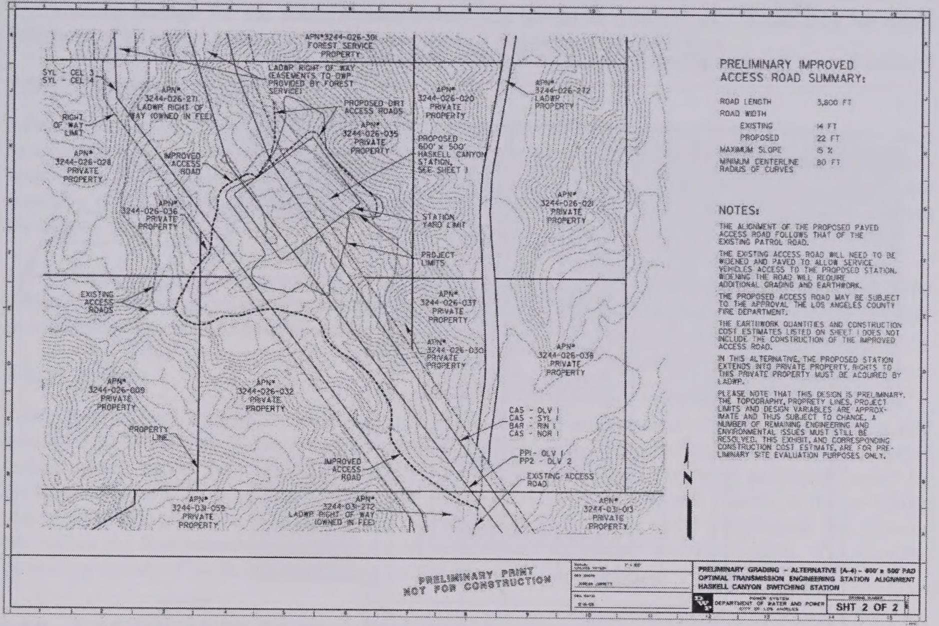
FIGURE 7. HASKELL CANYON GRADING PLAN


APN*3244-026-301
FOREST SERVICE
PROPERTY
SYL - CEL 3
SYL - CEL 4
LADWP RIGHT OF WAY
(EASEMENTS TO DWP
PROVIDED BY FOREST
SERVICE)
APN*
3244-026-271
LADWP RIGHT OF
WAY (OWNED IN FEE)
RIGHT
OF WAY
LIMIT
PROPOSED DIRT
ACCESS ROADS
APN*
3244-026-035
PRIVATE
PROPERTY
APN*
3244-026-028
PRIVATE
PROPERTY
IMPROVED
ACCESS
ROAD
APN*
3244-026-036
PRIVATE
PROPERTY
APN*
3244-026-020
PRIVATE
PROPERTY
PROPOSED
600' x 500'
HASKELL CANYON
STATION,
SEE SHEET 1
APN*
3244-026-272
LADWP
PROPERTY
STATION
YARD LIMIT
PROJECT
LIMITS
APN*
3244-026-021
PRIVATE
PROPERTY
EXISTING
ACCESS
ROADS
APN*
3244-026-037
PRIVATE
PROPERTY
APN*
3244-026-030
PRIVATE
PROPERTY
APN*
3244-026-038
PRIVATE
PROPERTY
APN*
3244-026-009
PRIVATE
PROPERTY
APN*
3244-026-032
PRIVATE
PROPERTY
PROPERTY
LINE
CAS - OLV 1
CAS - SYL 1
BAR - RIN 1
CAS - NOR 1
IMPROVED
ACCESS
ROAD
PP1 - OLV 1
PP2 - OLV 2
EXISTING ACCESS
ROAD
APN*
3244-031-059
PRIVATE
PROPERTY
APN*
3244-031-272
LADWP RIGHT OF WAY
(OWNED IN FEE)
APN*
3244-031-013
PRIVATE
PROPERTY
N
PRELIMINARY PRINT
NOT FOR CONSTRUCTION
POWER SYSTEM
DEPARTMENT OF WATER AND POWER
CITY OF LOS ANGELES
SHT 2 OF 2

PRELIMINARY IMPROVED ACCESS ROAD SUMMARY:

ROAD LENGTH	5,800 FT
ROAD WIDTH	
EXISTING	14 FT
PROPOSED	22 FT
MAXIMUM SLOPE	15 %
MINIMUM CENTERLINE RADIUS OF CURVES	80 FT

NOTES:

THE ALIGNMENT OF THE PROPOSED PAVED ACCESS ROAD FOLLOWS THAT OF THE EXISTING PATROL ROAD.

THE EXISTING ACCESS ROAD WILL NEED TO BE WIDENED AND PAVED TO ALLOW SERVICE VEHICLES ACCESS TO THE PROPOSED STATION. WIDENING THE ROAD WILL REQUIRE ADDITIONAL GRADING AND EARTHWORK.

THE PROPOSED ACCESS ROAD MAY BE SUBJECT TO THE APPROVAL THE LOS ANGELES COUNTY FIRE DEPARTMENT.

THE EARTHWORK QUANTITIES AND CONSTRUCTION COST ESTIMATES LISTED ON SHEET 1 DOES NOT INCLUDE THE CONSTRUCTION OF THE IMPROVED ACCESS ROAD.

IN THIS ALTERNATIVE, THE PROPOSED STATION EXTENDS INTO PRIVATE PROPERTY, RIGHTS TO THIS PRIVATE PROPERTY MUST BE ACQUIRED BY LADWP.

PLEASE NOTE THAT THIS DESIGN IS PRELIMINARY. THE TOPOGRAPHY, PROPRETY LINES, PROJECT LIMITS AND DESIGN VARIABLES ARE APPROXIMATE AND THUS SUBJECT TO CHANGE. A NUMBER OF REMAINING ENGINEERING AND ENVIRONMENTAL ISSUES MUST STILL BE RESOLVED. THIS EXHIBIT, AND CORRESPONDING CONSTRUCTION COST ESTIMATE, ARE FOR PRELIMINARY SITE EVALUATION PURPOSES ONLY.

PRELIMINARY GRADING - ALTERNATIVE (A-4) - 600' x 500' PAD
OPTIMAL TRANSMISSION ENGINEERING STATION ALIGNMENT
HASKELL CANYON SWITCHING STATION

5.0 EXPANSION OF BARREN RIDGE SWITCHING STATION

LADWP proposes expansion of the existing Barren Ridge Switching Station to the east side by 235 feet by 500 feet, for a total station size of 485 feet by 500 feet (approximately 5.6 acres). The expansion area of the station would include electrical structures and equipment for the addition of transmission lines, a material staging area, roadway within the station, and drainage area. Figure 8 illustrates the preliminary design layout for the station.

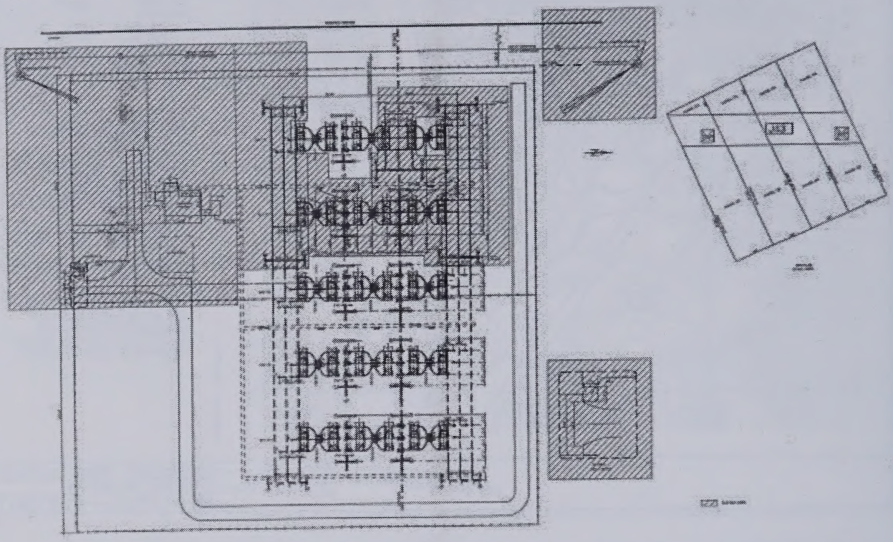
Expansion of the existing switching station would be very similar to the construction of the Haskell Canyon Switching Station as described above. Expansion would consist of preconstruction surveys, site preparation and grading, installation of reinforced concrete foundations, installation of electrical conduits for equipment power and control, and installation of structures and equipment.

Necessary pre-construction geotechnical on-site investigation would include two test pits excavated by a backhoe to investigate soil density and settlement, and four cone penetration test locations on-site to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

It is estimated that 700 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 80 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 90-day working period. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks and flatbed trailers. Cranes, man-lifts, portable welding units, line

trucks, and mechanic trucks would also be required. An estimated 8 months with approximately 60 workers would be required to expand the station.

FIGURE 8. BARREN RIDGE SWITCHING STATION EXPANSION LAYOUT



1.9 OPERATION OF TRANSMISSION LINES

The nominal voltage for the BRRTP transmission line would be 230 kV AC. There may be minor variations of up to five percent above the nominal level depending upon load flow.

1.9.1 Permitted Uses

After the transmission line has been energized, land uses that are compatible with safety regulations (such as agriculture and grazing) would be permitted in and adjacent to the right-of-way. Incompatible land uses within the right-of-way include construction and maintenance of inhabited dwellings, and any use requiring changes in surface elevation that would affect electrical clearances of existing or planned facilities.

Land uses on public lands that comply with local regulations would be permitted adjacent to or within the ROW, with require approval from the appropriate agency. Permission to use the ROW on private lands would have to be obtained from the utility owning the transmission line.

1.9.2 Safety

Safety is a primary concern in the design of this 230 kV transmission line. The AC transmission line would be protected with power circuit breakers and related line relay protection equipment. If conductor failure occurs, power would be automatically removed from the line. Lightning protection would be provided by overhead ground wires along the line. Electrical equipment and fencing at the switching station would be grounded. All fences, metal gates, pipelines, and other metal components that cross or are within the transmission line ROW would be grounded to prevent electrical shock. If applicable, grounding outside of the ROW may also occur.

1.10 MAINTENANCE OF TRANSMISSION LINES

The 230 kV transmission line would be inspected several times annually by both ground and air patrols. Maintenance would be performed as needed. When access is required for non-emergency maintenance and repairs, LADWP would adhere to the same precautions and procedures that were taken during the original construction.

Emergency maintenance would involve prompt movement of repair crews to repair or replace any damaged equipment or infrastructure. Crews would be instructed to protect crops, plants, wildlife, and other resources of significance. Restoration procedures following completion of repair work would be those prescribed for project implementation construction. The comfort and safety of local residents would be provided for by limiting noise, dust, and the danger caused by maintenance vehicle traffic. Details would be provided in the COM Plan and POD prior to line construction.

1.10.1 Vegetation Management

Vegetation management along the transmission line ROW would be required by the North American Reliability Council (NERC). In compliance with the NERC's Standard FAC-003-l, LADWP would prepare a Vegetation Management Plan for the BRRTP. The Vegetation Management Plan would be included in the COM Plan to be completed prior to the issuance of a Notice to Proceed from the USFS and BLM. Vegetation management would consist of routine tree trimming to maintain the required minimum 10-foot clearance from conductors to vegetation (California Public Resources Code [PRC] 4293); clearance of flammable brush vegetation within a 10-foot radius around the base of transmission line towers in accordance with California PRC 4292; and clearance immediately adjacent to access roads to permit adequate access to the facilities.

1.10.2 Access Road Maintenance

Ongoing access road maintenance would be conducted in accordance with existing or new road authorizations issued to LADWP. Access road maintenance consists of those activities necessary to allow continued access to the ROW and/or each tower structure. These activities may include grading, and maintenance of drainage systems, bridges, culverts, fences, gates and signs. Motor graders, backhoes, dump trucks and pickups are used to maintain access roads.

1.11 DECOMMISSIONING OF TRANSMISSION LINES

At the end of the useful life of the proposed Project, if the facility were no longer required, or if extension of the authorizations were not granted by federal land agencies at the time they expired, the transmission line would be abandoned. Subsequently, conductors, insulators and hardware would be dismantled and removed from the ROW. Tower structures would be removed and foundations broken off below ground surface.

If the line and associated ROW are abandoned at some future date, the ROW would be available for the same uses that existed prior to construction of the Project. Following abandonment and removal of the transmission line from the ROW, any areas disturbed to dismantle the line would be restored and rehabilitated as near as possible to their original condition.

2.0 ADDITION OF NEW 230 KV CIRCUIT

Between the proposed Haskell Canyon Switching Station and the existing Castaic Power Plant, LADWP proposes the addition of 12 miles of a new 230 kV transmission circuit onto existing Castaic – Olive 230 kV Transmission Line structures (towers 1-1 through 12-1). This new circuit would be called Castaic – Haskell Canyon #4 and would utilize the same conductor (2,156 kcmil "Bluebird" ACSS/AW) as that proposed for the new 230 kV transmission line between Barren Ridge and Haskell Canyon Switching Stations.

The addition of a new circuit on existing towers would require many of the same activities of a new transmission line (surveying of ROW, rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, and cleanup). However, all work would be within existing ROW and no new towers would be constructed. Some towers may need to be modified or reinforced to carry the additional weight of the new conductor. Specific towers requiring reinforcement would be determined following detailed design of the Project. Tower reinforcement would not alter the general design or the location of the structures. This process would generally include reinforced foundations or steel member replacements.

3.0 RECONDUCTORING

LADWP proposes the reconductoring of 76 miles of the existing BR-RIN 230 kV transmission line with larger conductors between the Barren Ridge Switching Station and Rinaldi Substation (towers 176-1 through 251-1). The existing conductors (954/ 2,312 kcmil) would be replaced with a new 1,433.6 kcmil "Merrimack" ACSS/TW/HS conductor. The new conductor would have a larger diameter that allows for greater electrical capacity.

The upgrade of the existing BR-RIN would also require many of the same activities of the new transmission line (surveying of ROW, rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, and cleanup). Removal of the existing conductor would be used to string a pulling line, and this line would then be used to pull in the new conductor. All work would remain within the existing 250-foot-wide ROW, with no additional ROW required. Some of the towers would need to be

modified, replaced, and/or have foundations reinforced or replaced to carry the additional weight of the new heavier conductor.

4.0 NEW HASKELL CANYON SWITCHING STATION

As a component of the BRRTP, LADWP proposes the construction of a new switching station in Haskell Canyon, south of the Angeles National Forest on LADWP-owned property at the convergence of several existing and proposed 230 kV transmission lines (the existing BR-RIN, the proposed double-circuit Barren Ridge-Haskell Canyon, existing Castaic-Northridge, Castaic-Sylmar, Castaic-Olive, and the proposed Castaic to Haskell Canyon).

The station would be approximately 500 feet by 600 feet to accommodate the necessary circuit positions, which are made up of equipment, such as steel support structures, circuit breakers, disconnect switches, and associated equipment, and a relay house and control house containing control and protective relaying equipment. The relay and control houses would each be approximately 30 feet long by 12 feet wide by 10 feet high and constructed of gray concrete block. The station yard would include a paved internal access road approximately 16 feet wide and would be enclosed by chain-link fencing with barbed-wire extension for security. Figure 6 illustrates the preliminary design layout for the station. Figure 7 illustrates the preliminary grading plan for the station.

Necessary pre-construction geotechnical investigation on-site would include six borings by a drill rig to investigate bedrock and soil stability and four cone penetration test locations after site grading to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

Construction of the new Haskell Canyon Switching Station would consist of preconstruction surveys, clearing and grading of access roads, site grading and drainage development, installation of concrete foundations and steel support structures, installation of below- and above-ground electrical conduits for equipment power and control, installation of below- and above-grade grounding conductors, and installation of control and relay houses. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks, and flatbed trailers. Cranes, man-lifts, portable welding units, line trucks, and mechanic trucks would also be required. Construction would require an estimated 12 months with approximately 60 workers.

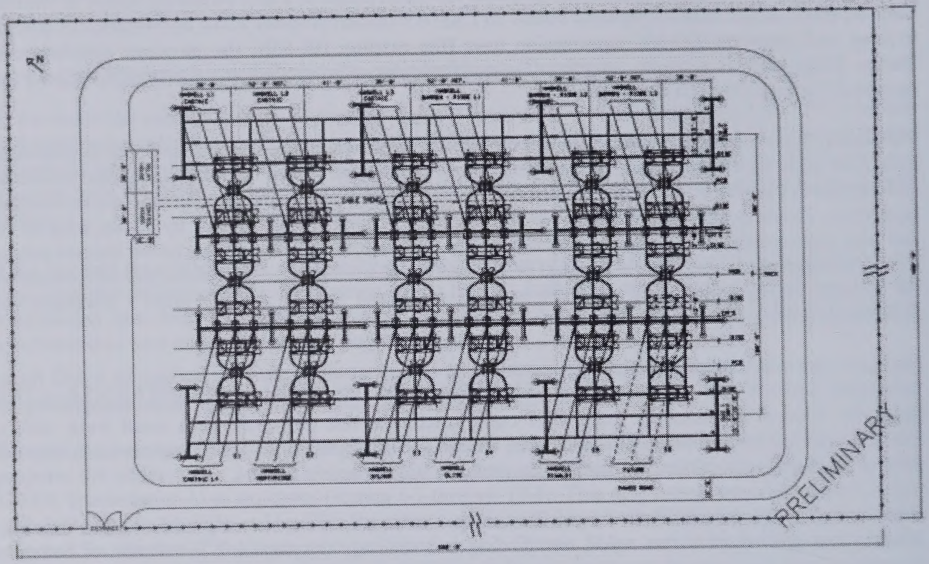
Site preparation work for the station would involve clearing and grading of access roads, clearing of the switchyard site, the cut and fill grading of the site, and placement and compaction of structural fill that would serve as a base for switching station facilities. The site would be graded to maintain current drainage patterns as much as possible. A 16-foot wide paved road and 100-foot by 100-foot gravel parking area would be required. The yard would be covered with crushed-rock aggregate. Native vegetation would be re-established where possible outside the switchyard fence.

Following site grading and development, reinforced concrete foundations would be installed to support the steel structures and electrical equipment and control facilities. It is estimated that 1,500 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 180 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 120-day working period. Subsequent to the foundation installation, trenches would be dug to facilitate placement of copper conductors for the station grounding mat.

Multiple transmission lines would be terminated into the switching station (i.e., the new and existing Barren Ridge – Haskell and Castaic – Haskell Canyon transmission lines) and would need support and

require the installation of galvanized steel structures. An existing 115 kV transmission line may need to be relocated around the proposed station. High-voltage bus work consisting of aluminum jumpers and tubing would be installed within the station.

FIGURE 6. HASKELL CANYON SWITCHING STATION DESIGN LAYOUT



Geological Resources

March 2011

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

Preliminary Geotechnical Evaluation

PROJECT NUMBER:
115244

PROJECT CONTACT:
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POWER
ENGINEERS

Preliminary Geotechnical Evaluation

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TABLE OF CONTENTS

1.0 INTRODUCTION **1**
- 1.1 STUDY PERSONNEL 1
- 1.2 PROJECT DESCRIPTION 1
  - 1.2.1. Construction of New 230 kV Double-Circuit Transmission Line 3
  - 1.2.2. Addition of New 230 kV Circuit 13
  - 1.2.3. Reconductoring of Existing Transmission Line 13
  - 1.2.4. Construction of New Switching Station 14
  - 1.2.5. Expansion of Existing Switching Station 15
  - 1.2.6. Project-Wide Mitigation Measures 15
  - 1.2.7. Construction Work Force and Schedule 15

2.0 REGULATORY FRAMEWORK **17**

3.0 PROJECT AREA OVERVIEW **18**

4.0 INVENTORY METHODS **19**

5.0 AFFECTED ENVIRONMENT **20**
- 5.1 REGIONAL GEOLOGIC SETTING 20
- 5.2 STUDY AREA GEOLOGIC SETTING 20
- 5.3 SEISMICITY 21
- 5.4 DATA INVENTORY RESULTS - SEGMENTS 24
  - 5.4.1. Geologic Resources 24
  - 5.4.2. Geologic and Seismic Hazards 27

6.0 IMPACT ASSESSMENT - SEGMENTS **37**
- 6.1 METHODOLOGY 37
- 6.2 GEOLOGIC RESOURCE SENSITIVITY 37
- 6.3 POTENTIAL GEOLOGIC AND SEISMIC HAZARDS 38
- 6.4 IMPACT LEVELS 38
- 6.5 MITIGATION RECOMMENDATIONS 39
  - 6.5.1. Soil Loss/Soil Erosion 39
  - 6.5.2. Distinctive Geologic Features 40
  - 6.5.3. Surface Rupture 40
  - 6.5.4. Seismic Ground Shaking 41
  - 6.5.5. Liquefaction 41
  - 6.5.6. Landslides 41
  - 6.5.7. Subsidence 42
  - 6.5.8. Soil Settlement 42
  - 6.5.9. Expansive Soils 42
  - 6.5.10. Corrosive Soils 43
  - 6.5.11. Groundwater 43
  - 6.5.12. Inundation from Dam Failure, Seiche or Tsunami 43

7.0 IMPACT RESULTS **45**
- 7.1 NEW 230 KV TRANSMISSION LINE - SEGMENTS 45
  - 7.1.1. Soils 49
  - 7.1.2. Distinctive Geologic Features 49
  - 7.1.3. Surface Rupture 51
  - 7.1.4. Seismic Ground Shaking 51
  - 7.1.5. Liquefaction 52

7.1.6. Landslides 53
7.1.7. Soil Erosion 55
7.1.8. Subsidence 56
7.1.9. Settlement 56
7.1.10. Expansive Soils 56
7.1.11. Corrosive Soils 57
7.1.12. Groundwater 58
7.1.13. Inundation from Dam Failure, Seiche or Tsunami 59
7.2 NEW 230 KV CIRCUIT 60
7.3 RECONDUCTORING 60
7.4 NEW HASKELL CANYON SWITCHING STATION 61
7.5 EXPANSION OF BARREN RIDGE SWITCHING STATION 62

8.0 ALTERNATIVES 64

8.1 DEVELOPMENT OF ALTERNATIVES 64
8.2 ALTERNATIVES DESCRIPTION 64
8.2.1. Action Alternatives 64
8.2.2. Summary Description of Action Alternatives 73
8.2.3. No Action Alternative 74
8.3 IMPACT ASSESSMENT—ROUTING ALTERNATIVES 74
8.4 IMPACT RESULTS—ROUTING ALTERNATIVES 74
8.5 NO ACTION ALTERNATIVE 79
8.6 CUMULATIVE IMPACTS 79
8.6.1. Introduction 79
8.6.2. Impacting Factors 79
8.6.3. Impact Area 80
8.6.4. Cumulative Projects List – Major Present and Reasonably Foreseeable Future Actions. 80
8.6.5. Cumulative Impacts Summary 88

9.0 REFERENCES 90

10.0 ACRONYMS AND ABBREVIATIONS 95

TABLES

TABLE 1-1. ANTICIPATED CONSTRUCTION SEQUENCE 16
TABLE 1-2. CONSTRUCTION WORKFORCE AND SCHEDULE 16
TABLE 1 – PRINCIPAL GEOLOGIC UNITS IN THE PROJECT STUDY AREA 21
TABLE 2 – PRINCIPAL REGIONAL ACTIVE AND POTENTIALLY ACTIVE FAULTS 22
TABLE 3 – SUMMARY OF U.S. DEPARTMENT OF AGRICULTURE U.S. GENERAL SOIL TYPES[1] 25
TABLE 4 – SUMMARY OF DISTINCTIVE GEOLOGIC FEATURES 27
TABLE 5 – SUMMARY OF EARTHQUAKE FAULT ZONES 28
TABLE 6 – SUMMARY OF GROUND SHAKING POTENTIAL 29
TABLE 7 – SUMMARY OF LIQUEFACTION HAZARD ZONES 30
TABLE 8 – SUMMARY OF MAPPED LANDSLIDES AND EARTHQUAKE-INDUCED LANDSLIDE HAZARD ZONES 31
TABLE 9 – SUMMARY OF EROSION POTENTIAL AREAS TRAVERSED BY EACH SEGMENT[1] 32
TABLE 10 – SUMMARY OF EXPANSIVE SOIL POTENTIAL AREAS TRAVERSED BY EACH SEGMENT[1] 33
TABLE 11 – SUMMARY OF CORROSIVE SOIL POTENTIAL AREAS TRAVERSED BY EACH SEGMENT[1] 34
TABLE 12 – SUMMARY OF GROUNDWATER LEVELS BY SEGMENT[1] 35
TABLE 13 – SUMMARY OF DAM FAILURE INUNDATION AREAS 36
TABLE 14 – SENSITIVITY RATINGS FOR GEOLOGIC RESOURCES 38

TABLE 15 – IMPACT LEVELS 39
TABLE 16 – RELATIVE GEOLOGIC IMPACTS 47
TABLE 17 – SUMMARY OF POTENTIAL INITIAL IMPACTS TO SOILS[1] 49
TABLE 18 – SUMMARY OF POTENTIAL INITIAL IMPACTS TO DISTINCTIVE GEOLOGIC FEATURES[1] 50
TABLE 19 – SUMMARY OF POTENTIAL INITIAL IMPACTS DUE TO EARTHQUAKE FAULT ZONES 51
TABLE 20 – SUMMARY OF POTENTIAL INITIAL IMPACTS DUE TO GROUND SHAKING 52
TABLE 21 – SUMMARY OF POTENTIAL INITIAL IMPACTS DUE TO LIQUEFACTION HAZARD ZONES 53
TABLE 22 – SUMMARY OF POTENTIAL INITIAL IMPACTS DUE TO MAPPED LANDSLIDES 54
TABLE 23 – SUMMARY OF POTENTIAL INITIAL IMPACTS DUE TO EARTHQUAKE-INDUCED LANDSLIDE HAZARD ZONES 55
TABLE 24 – SUMMARY OF POTENTIAL INITIAL IMPACTS DUE TO SOIL EROSION[1] 56
TABLE 25 – SUMMARY OF POTENTIAL INITIAL IMPACTS DUE TO CORROSIVE SOILS[1] 58
TABLE 26 – SUMMARY OF POTENTIAL INITIAL IMPACTS DUE TO GROUNDWATER[1] 59
TABLE 27 – SUMMARY OF POTENTIAL INITIAL IMPACTS DUE TO DAM FAILURE INUNDATION 60
TABLE 28 – SUMMARY OF AFFECTED ENVIRONMENT FOR PROPOSED ALTERNATIVES 73
TABLE 29 – SUMMARY OF THE PROPOSED ALTERNATIVE POTENTIAL INITIAL IMPACTS TO SOILS[1] ... 74
TABLE 30 – SUMMARY OF THE PROPOSED ALTERNATIVE POTENTIAL INITIAL IMPACTS TO DISTINCTIVE GEOLOGIC FEATURES[1] 75
TABLE 31 – SUMMARY OF THE PROPOSED ALTERNATIVE POTENTIAL INITIAL IMPACTS DUE TO EARTHQUAKE FAULT ZONES 75
TABLE 32 – SUMMARY OF THE PROPOSED ALTERNATIVE POTENTIAL INITIAL IMPACTS DUE TO GROUND SHAKING 75
TABLE 33 – SUMMARY OF THE PROPOSED ALTERNATIVE POTENTIAL INITIAL IMPACTS DUE TO LIQUEFACTION HAZARD ZONES 76
TABLE 34 – SUMMARY OF THE PROPOSED ALTERNATIVE POTENTIAL INITIAL IMPACTS DUE TO MAPPED LANDSLIDES 76
TABLE 35 – SUMMARY OF THE PROPOSED ALTERNATIVE POTENTIAL INITIAL IMPACTS DUE TO EARTHQUAKE-INDUCED LANDSLIDE HAZARD ZONES 77
TABLE 36 – SUMMARY OF THE PROPOSED ALTERNATIVE POTENTIAL INITIAL IMPACTS DUE TO SOIL EROSION[1] 77
TABLE 37 – SUMMARY OF THE PROPOSED ALTERNATIVE POTENTIAL INITIAL IMPACTS DUE TO CORROSIVE SOILS[1] 78
TABLE 38 – SUMMARY OF THE PROPOSED ALTERNATIVE POTENTIAL INITIAL IMPACTS DUE TO GROUNDWATER[1] 78
TABLE 39 – SUMMARY OF THE PROPOSED ALTERNATIVE POTENTIAL INITIAL IMPACTS DUE TO DAM FAILURE INUNDATION 79
TABLE 8A. PROPOSED GENERATION PROJECTS IN THE PROJECT VICINITY 84
TABLE 8B. BLM RIDGECREST OFFICE APPLICATIONS FOR WIND AND SOLAR ENERGY GENERATION PROJECTS IN THE PROJECT VICINITY. 85
TABLE 8C. PROPOSED LOCAL PROJECTS IN THE PROJECT VICINITY. 88

FIGURES

FIGURE 1-1. LADWP'S PROPOSED ACTION COMPONENTS....2
FIGURE 1-2. TYPES OF TOWERS....3
FIGURE 1-3. FOUR-CIRCUIT TOWERS TO BE UTILIZED....5
FIGURE 1-4. TYPICAL TOWER COMPONENTS....6
FIGURE 1-5. PRELIMINARY ROUTING SEGMENTS....8
FIGURE 1-6. THREE-CIRCUIT TOWER TYPES....10
FIGURE 1-7. THREE-CIRCUIT TOWER MITIGATION....11
FIGURE 8-1. ACTION ALTERNATIVES....65
FIGURE 8-2. IDENTIFIED HELICOPTER MITIGATION LOCATIONS....67
FIGURE 8-3. AVENUE L RE-ROUTE ON ALTERNATIVE 3....71
FIGURE 8-4. CUMULATIVE PROJECTS....81

APPENDICES

GEOTECHNICAL FIGURES
    FIGURE 1 – PROJECT AREA LOCATION MAP
    FIGURE 2 – GEOLOGIC MAP
    FIGURE 3 – FAULT LOCATION MAP
    FIGURE 4 – REGIONAL SOILS MAP
    FIGURE 4A – REGIONAL SOILS MAP LEGEND
    FIGURE 5 – EARTHQUAKE FAULT ZONES MAP
    FIGURE 6 – ESTIMATED PEAK HORIZONTAL GROUND ACCELERATION CONTOURS
    FIGURE 7 – LIQUEFACTION HAZARD ZONES MAP
    FIGURE 8 – MAPPED LANDSLIDE INVENTORY
    FIGURE 9 – EARTHQUAKE-INDUCED LANDSLIDE HAZARD ZONES MAP
    FIGURE 10 – SOIL EROSION POTENTIAL MAP
    FIGURE 11 – BRRTP PROPOSED PROJECT ALTERNATIVES

APPENDIX A – IMPACT ASSESSMENT TABLES
APPENDIX B – USDA SOIL TABLE
APPENDIX C – DETAILED CONSTRUCTION, OPERATION, AND MAINTENANCE PROCESS

1.0 INTRODUCTION

The City of Los Angeles Department of Water and Power (LADWP) is proposing the Barren Ridge Renewable Transmission Project (BRRTP or Project) to access clean, renewable resources in the Tehachapi Mountains and Mojave Desert areas, and to improve reliability and upgrade transmission capacity.

LADWP, the US Department of Agriculture, Forest Service (USFS or Forest Service) and the U.S Department of the Interior, Bureau of Land Management (BLM) are preparing a joint Environmental Impact Statement (EIS) / Environmental Impact Report (EIR) for the proposed BRRTP. LADWP is the California Environmental Quality Act (CEQA) Lead Agency, while the USFS and BLM are the federal Co-Lead Agencies under the National Environmental Policy Act (NEPA). An EIS/EIR is an informational disclosure document used to inform agency decision makers and the public of the potential significant environmental effects of a project, identify possible ways to eliminate or minimize the potential significant effects, and describe reasonable alternatives to the Proposed Action /Project.

The purpose of the preliminary geotechnical evaluation is to assess the alternative corridors (segments) and proposed switching station within the Project study area in regards to potential geologic and seismic hazards and potential geologic impacts associated with implementation of the Project. The preliminary geotechnical evaluation: 1) presents regulatory framework, 2) provides an overview of the technical methodology used in collecting baseline conditions and evaluating impacts, 3) examines the affected environment within the study corridors and vicinity, 4) describes the impacts with respect to potential geologic and seismic hazards and potential geologic impacts from construction and operation of the Project, 5) evaluates the level of potential impacts based upon NEPA/CEQA significance criteria, and 6) presents specific recommendations for mitigation to reduce or eliminate potential impacts.

1.1 STUDY PERSONNEL

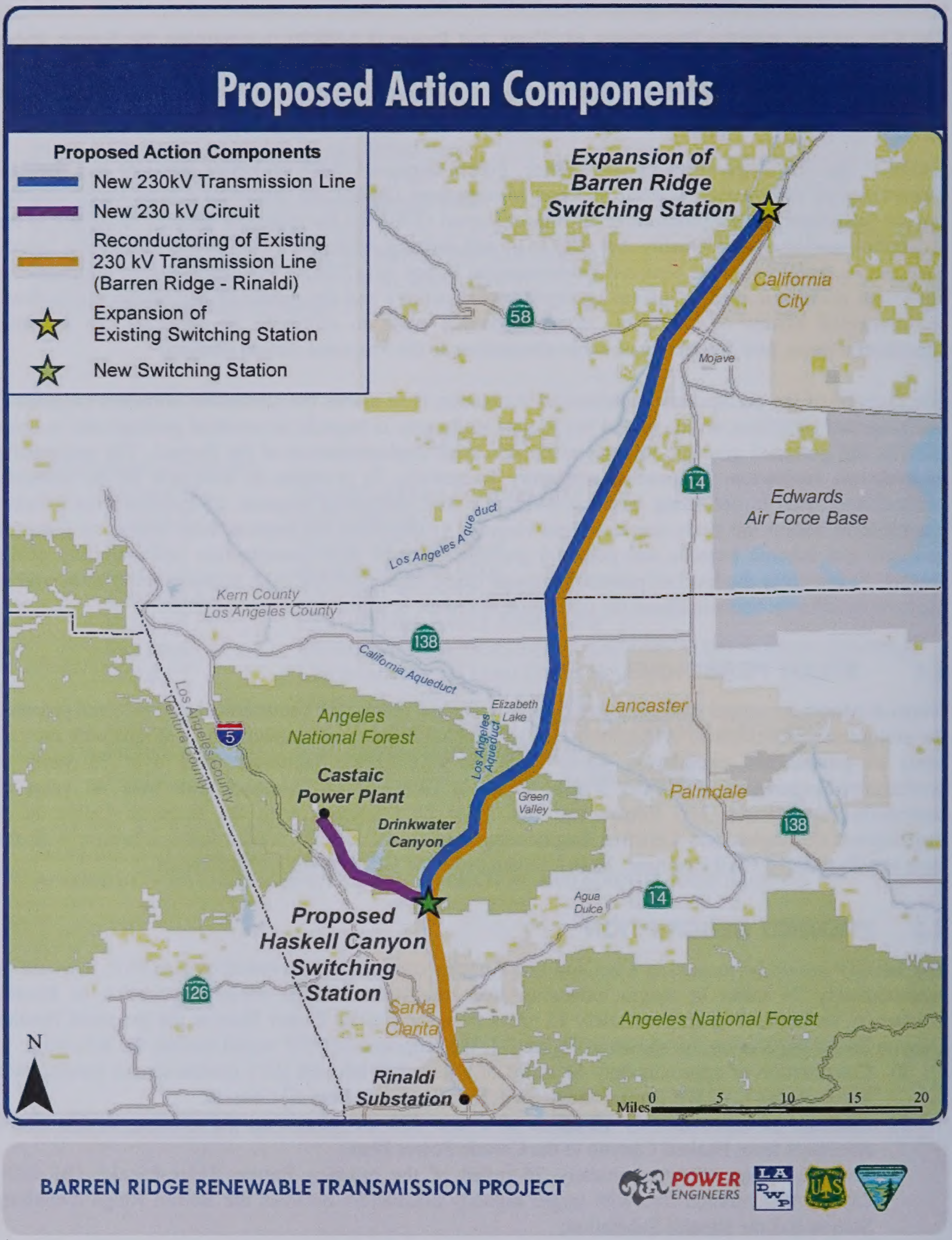
Ninyo & Moore personnel who compiled background data, conducted geotechnical analysis, and prepared the preliminary geotechnical evaluation included Michael Rogers, an Engineering Geologist with over 20 years of professional experience; Carol Price, an Engineering Geologist with over 25 years of professional experience; and Jalal Vakili, Ph.D., a Geotechnical Engineer with over 40 years of professional experience. Mr. Rogers and Ms. Price hold licenses with the State of California as Professional Geologists and Certified Engineering Geologists, and Dr. Vakili holds a license with the state as a Registered Civil Engineer. Jesse Lahman provided GIS support for the Project.

1.2 PROJECT DESCRIPTION

The BRRTP would be located in Kern and Los Angeles counties. As proposed by LADWP, it would be approximately 76 miles in length extending from the Barren Ridge Switching Station to Rinaldi Substation, and extending approximately 12 miles from the Castaic Power Plant to the proposed Haskell Canyon Switching Station. As shown in Figure 1-1, the proposed BRRTP would include the following:

1) Construction of approximately 61 miles of a new 230 kilovolt (kV) double-circuit transmission line from the LADWP Barren Ridge Switching Station to Haskell Canyon;
2) Addition of approximately 12 miles of a new 230 kV circuit on the existing double-circuit structures from Haskell Canyon to the Castaic Power Plant;
3) Reconductoring of approximately 76 miles of the existing Barren Ridge-Rinaldi (BR-RIN) 230 kV transmission line with larger capacity conductors between the Barren Ridge Switching Station and the Rinaldi Substation;
4) Construction of a new switching station in Haskell Canyon;
5) Expansion of the existing Barren Ridge Switching Station.

FIGURE 1-1. LADWP'S PROPOSED ACTION COMPONENTS


Proposed Action Components
Proposed Action Components
New 230kV Transmission Line
New 230 kV Circuit
Reconductoring of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
Expansion of Existing Switching Station
New Switching Station
Expansion of Barren Ridge Switching Station
California City
58
Mojave
14
Edwards Air Force Base
Los Angeles Aqueduct
Kern County
Los Angeles County
138
California Aqueduct
Elizabeth Lake
Lancaster
Los Angeles Aqueduct
Angeles National Forest
Los Angeles County
Ventura County
5
Castaic Power Plant
Drinkwater Canyon
Green Valley
Palmdale
138
Agua Dulce
14
Proposed Haskell Canyon Switching Station
126
Santa Clarita
Angeles National Forest
N
Rinaldi Substation
Miles 0 5 10 15 20
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS
LA DWP

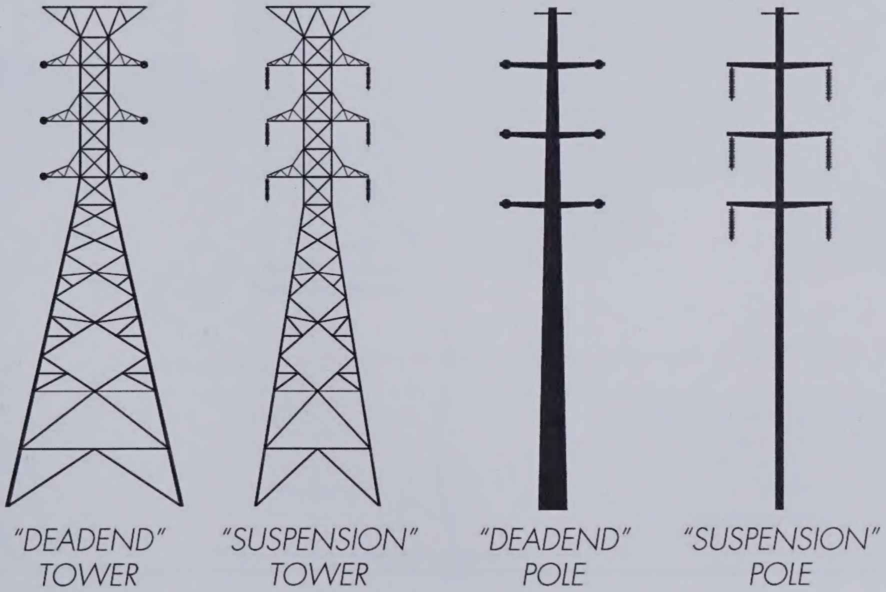
1.2.1. Construction of New 230 kV Double-Circuit Transmission Line

The proposed double-circuit 230 kV transmission line component of the BRRTP would consist of two alternating current (AC) circuits from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station in Haskell Canyon.

The proposed structures for the new transmission line would primarily be self-supporting double-circuit steel lattice towers fabricated from galvanized steel members, as shown on the left side of Figure 1-2. Depending on the environmental conditions of the surrounding terrain, the height of the proposed lattice structures would range from 110 to 195 feet, with an average tower-to-tower span of 1,000 to 1,100 feet. Appendix C lists the structure specifications for the number of structures per mile, average span length, and average heights for towers and components. Exact structure placement would be determined during engineering surveys and detailed design studies for the selected Alternative route following the Record of Decision (ROD) on the EIS/EIR. A variety of engineering, constructability, existing access, and environmental issues would be considered during detailed structure siting within the permitted ROW.

"Dead-end" towers of self-supporting, steel-lattice design would be required periodically to add longitudinal strength along the line. Dead-end towers would also be used at turn (angle) locations along the line, at heavily loaded tower locations, and at specific utility crossings (e.g., other transmission lines) for added safety. Dead-ended towers are of the same basic configuration as suspension towers (non-angle structures), the difference being in the tower "arms," insulator systems, and tower weights.

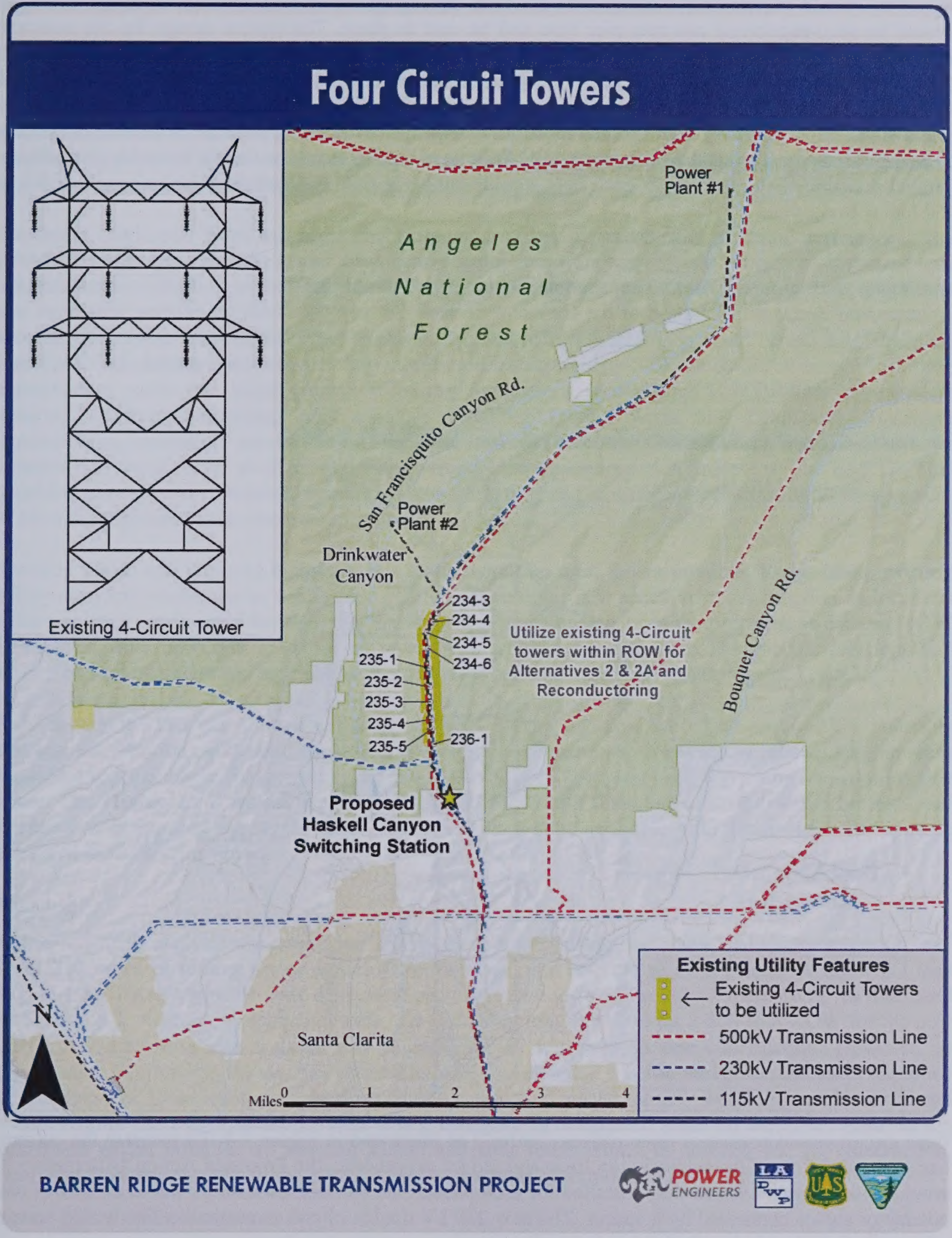
FIGURE 1-2. TYPES OF TOWERS



Self-supporting, tubular steel poles (TSP) have been proposed by LADWP as an available mitigation structure where appropriate to reduce potential impacts, such as conflicts with cultivation on agricultural lands. The TSPs can reduce impacts in some cases due to a smaller footprint than the proposed self-supporting steel lattice structures; however, more TSPs per mile are necessary due to a shorter average span between structures. The TSPs would have an average height range between 95 and 180 feet, depending on the conditions of the surrounding terrain, with an average tower-to-tower span of 700 to 800 feet. Refer to Figure 1-2 for an illustration of the double-circuit poles.

For the majority of the alignment, the two new 230 kV circuits would be placed on new double-circuit transmission towers, but for approximately 1.5 miles, the circuits would be placed on existing four-circuit structures that are located just north of the proposed Haskell Canyon Switching Station. Between where the existing BR-RIN crosses Dry Canyon to the intersection of the Castaic transmission lines, LADWP has existing four-circuit towers with three vacant positions. The existing towers would be utilized in this section for the proposed 230 kV double circuit transmission line instead of constructing new towers. See Figure 1-3 for the location and illustration of the existing four-circuit towers to be utilized.

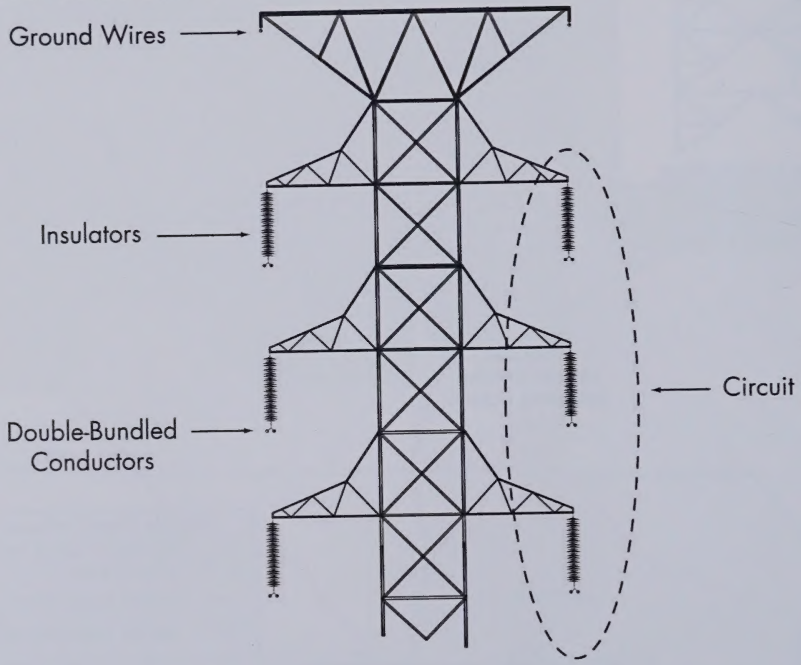
FIGURE 1-3. FOUR-CIRCUIT TOWERS TO BE UTILIZED


Four Circuit Towers
Existing 4-Circuit Tower
Angeles National Forest
Power Plant #1
Power Plant #2
San Francisquito Canyon Rd.
Drinkwater Canyon
Bouquet Canyon Rd.
234-3
234-4
234-5
234-6
235-1
235-2
235-3
235-4
235-5
236-1
Utilize existing 4-Circuit towers within ROW for Alternatives 2 & 2A and Reconductoring
Proposed Haskell Canyon Switching Station
Santa Clarita
N
Miles 0 1 2 3 4
Existing Utility Features
Existing 4-Circuit Towers to be utilized
500kV Transmission Line
230kV Transmission Line
115kV Transmission Line
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS
LA DWP

The self-supporting steel lattice structures and TSPs would utilize concrete foundations. Steel lattice structures would require four footings (one for each leg); TSPs would require single footings. Footings would be steel-reinforced concrete pier type and be cast in place. The typical design for the concrete footings for lattice structures would be between 2.5 and 5.0 feet in diameter, with an average depth of 20 feet depending on soil conditions. Typical design for single foundations for TSPs would include augured holes approximately five to seven feet in diameter and 15 to 30 feet deep, depending on conditions. Formwork steel reinforcing would be assembled in the hole prior to casting concrete in place. Reinforcing steel would become integral to the lower leg of the steel lattice structure during assembly. An above-ground concrete form placed over each hole would result in a final concrete foundation height of 0.5 to 2.0 feet above ground level.

As illustrated in Figure 1-4, Typical Tower Components, each tower carries conductors ("wires"), insulators, and ground wires. The conductor being considered for the new double-circuit 230 kV transmission line and installation of the Castaic – Haskell Canyon #4 circuit on existing structures is a bundled 715.5 kcmil "Starling" ACSS/AW. The reconductoring of the BR-RIN transmission line between Barren Ridge Switching Station and Rinaldi Substation would require a bundled 1,433.6 kcmil "Merrimack" ACSS/TW/HS conductor.

FIGURE 1-4. TYPICAL TOWER COMPONENTS



Each circuit would consist of three phases ("wires") as illustrated in Figure 1-4. To increase the current-carrying capability of the transmission lines and reduce power loss, the Proposed Action (Alternative 2) would utilize bundled conductors installed for each phase. The bundled conductors would consist of two conductor cables connected by a spacer. The new 230 kV double-circuit transmission line would consist of a total of six double-bundled (12 individual) wires.

Minimum conductor height above the ground, under normal operation of the line, is 30 feet. Greater clearances may be required in certain areas to allow for clearances over trees or other vegetation that

could pose a risk to the operation of the transmission line. Minimum conductor clearance would dictate the exact height of each tower based on topography and safety clearance requirements.

Insulators are used to provide the physical connection of conductors to structures. These system components are made of very low conducting materials (polymer insulators) that inhibit the flow of electric current from energized conductors to ground or to other energized system elements. Insulators and their associated hardware are to be configured in an "I" assembly to support conductors while maintaining required distances between phases and grounded structures. Each "I" string would consist of six-inch diameter insulators between six and eight feet long.

To shield conductors from hazard of direct lightning strikes by transferring lightning currents into the ground, overhead ground wires (shield wires) or fiber optic ground wire would be installed on top of new structures.

Construction of a transmission line involves the following general sequence of events: surveying activities; identifying and constructing access roads; clearing ROW and tower sites (including construction yards and batch plants); installing foundations; assembling and installing the towers; clearing, pulling, tensioning, and splicing; installing ground wires and conductors; installing counterpoise; switching station tie-in; and site upkeep and site reclamation. Various phases of construction would occur at different locations throughout the construction process for the BRRTP. This would require several contractors operating at the same time and in different locations. Refer to Appendix C for a description of each construction activity.

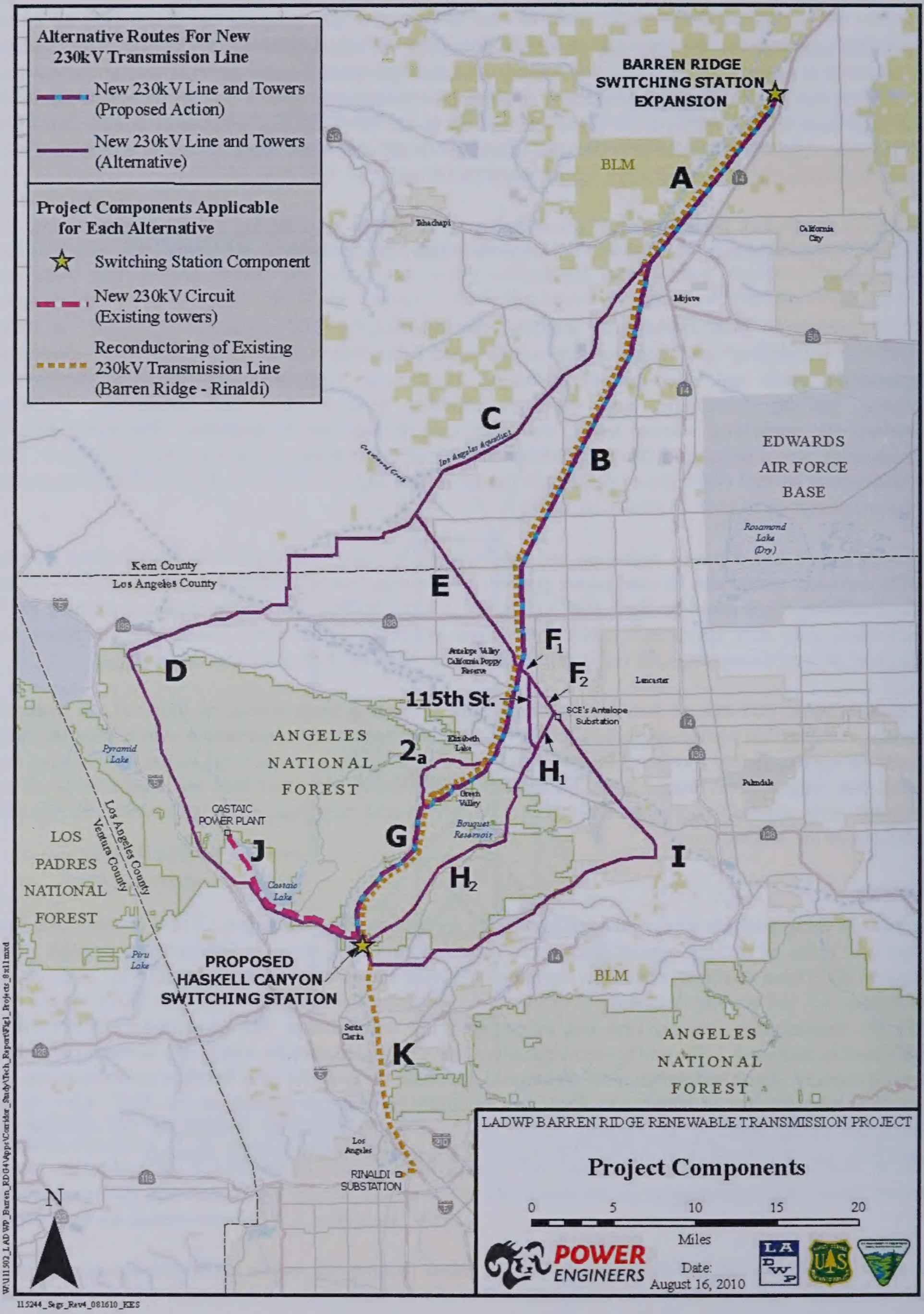
Existing paved and unpaved highways and roads would be used where possible. Roads along existing utility corridors would also be used where possible to minimize new access road construction. In locations where existing roads could be used, that are located in close proximity to the proposed or existing ROW centerlines, only new spur roads to the tower sites would be constructed. The specific locations and design of all new access and spur roads would be determined during final Project design.

It is anticipated that one or two construction yards or staging areas would be required for materials storage, construction equipment, construction vehicles, and temporary construction offices. Staging areas would be approximately five acres in size, and located centrally or near each end of the transmission line route. The staging areas would likely be located on previously disturbed land and would be level and surfaced with crushed aggregate base. The LADWP would negotiate with landowners for specific locations of the staging areas.

Routing

In 2007, a siting analysis was conducted to identify appropriate sites for a new 230 kV transmission line. Over 200 miles of routing opportunities were identified and referred to as Segments A through I (see Figure 1-5). These segments were then combined to create end-to-end routing "alternatives" as discussed in Section 8.2. All routing Segments were identified assuming the need for a 200-foot ROW for the new 230 kV transmission line and the use of conventional transmission line construction. However, as discussed in Section 8.2, the end-to-end alternatives have included specific mitigation measures to reduce certain impacts. These mitigation measures would eliminate the need for new ROW in some locations and would require the use of helicopters for tower assembly in designated areas on the ANF. Also, to the maximum extent possible, all existing access and spur roads would be utilized for the construction, operation, and maintenance of the BRRTP. Below is a brief description of each segment.

FIGURE 1-5. PRELIMINARY ROUTING SEGMENTS


Alternative Routes For New 230kV Transmission Line
New 230kV Line and Towers (Proposed Action)
New 230kV Line and Towers (Alternative)
Project Components Applicable for Each Alternative
Switching Station Component
New 230kV Circuit (Existing towers)
Reconductoring of Existing 230kV Transmission Line (Barren Ridge - Rinaldi)
BARREN RIDGE SWITCHING STATION EXPANSION
BLM
A
Tehachapi
California City
Mojave
58
14
C
Los Angeles Aqueduct
Cottonwood Creek
B
EDWARDS AIR FORCE BASE
Rosamond Lake (Dry)
Kern County
Los Angeles County
E
5
138
F1
F2
Antelope Valley California Poppy Reserve
115th St.
SCE's Antelope Substation
Lancaster
D
ANGELES NATIONAL FOREST
2a
Elizabeth Lake
H1
Palmdale
Pyramid Lake
Green Valley
CASTAIC POWER PLANT
Bouquet Reservoir
LOS PADRES NATIONAL FOREST
Los Angeles County
Ventura County
G
J
I
H2
Castaic Lake
Piru Lake
PROPOSED HASKELL CANYON SWITCHING STATION
BLM
Santa Clarita
K
ANGELES NATIONAL FOREST
126
118
210
Los Angeles
RINALDI SUBSTATION
N
LADWP BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
Project Components
0
5
10
15
20
Miles
POWER ENGINEERS
Date: August 16, 2010
LA DWP
W:\11502_LADWP_Barren_RDG\4\Apps\Corridor_Study\Tech_Report\Fig1_Project_8x11.mxd
115244_Segs_Rev4_081610_KES

Segment A is 13 miles long and runs from LADWP's Barren Ridge Switching Station to the unincorporated community of Mojave, California. It would traverse four miles of BLM managed public lands and parallel LADWP's existing 230 kV Barren Ridge – Rinaldi Transmission Line (BR-RIN) and the 500 kV Pacific Direct Current Intertie (PDCI). It traverses four miles of BLM-managed lands.

Segment B is 27 miles long and starts just north of the unincorporated community of Mojave, California and travels south to a point one mile east of the Antelope Valley California Poppy Reserve. This segment parallels LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines for its entire length.

Segment C is 22 miles long and begins at the location as Segment B, north of the unincorporated community of Mojave, California. Segment C parallels the Los Angeles Aqueduct in a southwest direction to Cottonwood Creek. No existing transmission lines are located within the aqueduct corridor; however, Southern California Edison's (SCE's) Tehachapi Renewable Transmission Project's (TRTP) Alternative 10A is also proposed along the same corridor.

Segment D is 48 miles long and would traverse 16 miles of National Forest System (NFS) lands. This segment generally parallels the Los Angeles Aqueduct in a southwest direction, beginning near Cottonwood Creek and traveling to Lancaster Road. It then travels west to the Interstate 5 freeway utility corridor and continues southeast along LADWP's existing Castaic – Rinaldi corridor to the proposed Haskell Canyon Switching Station. Five high voltage transmission lines are located along the Interstate 5 section of the segment. Oil and gas pipelines are also located in the same I-5 corridor. Continuing further south near Castaic Power Plant, Segment D would be located to the south of two existing LADWP double-circuit 230 kV transmission line towers until reaching the proposed Haskell Canyon Switching Station.

Segment E is 11 miles long and begins near Cottonwood Creek at the intersection of Segments C and D. Segment E travels in a southeast direction and intersects Segment B one mile east of the Antelope Valley California Poppy Reserve. Three existing high voltage transmission lines (Midway-Vincent 500 kV, Antelope-Vincent 230 kV, and Antelope-Mesa 230 kV) are located within the corridor that Segment E would parallel. SCE's proposed TRTP Segment 4 is also proposed adjacent this same corridor.

Segment F is the shortest segment, at four miles in length, and begins at the intersection of Segments B and E one mile east of the Antelope Valley California Poppy Reserve. Three existing high voltage transmission lines (Midway-Vincent 500 kV, Antelope-Vincent 230 kV, and Antelope-Mesa 230 kV) are also located parallel to this segment.

The 115th Street Segment was proposed as a modification to avoid impacts to residents in the Antelope Valley near Segments F and H, described below. It begins mid-way within Segment F near SCE's Antelope Substation and parallels 115th Street south to the California Aqueduct. No existing transmission lines occur within this corridor; however, TRTP's proposed Segment 4 would be located along this alignment. This segment would split Segments F and H as shown in Figure 1-5 creating these Segments into F1, F2, H1 and H2.

Segment G is 21 miles long. Thirteen miles traverse National Forest System (NFS) lands. It travels south from the intersection of Segments B and F one mile east of the Antelope Valley California Poppy Reserve to the proposed Haskell Canyon Switching Station, located near the southern boundary of the ANF. It is a designated utility corridor containing LADWP's existing 230 kV BR-RIN and 500 kV PDCI lines. The BRRTP proposes to use its existing four-circuit structures for two miles, from towers 234-3 to 236-2 (see Figure 1-3).

Segment 2a is seven miles long. It would bypass the unincorporated community of Green Valley and follow an existing fire road through ANF. Segment 2a would not parallel existing transmission facilities, and a new utility corridor would be required.

Segment H is 20 miles long and would parallel SCE's Antelope-Pardee line. It starts near SCE's Antelope Substation at the intersection of Segments F and I and traverses 13 miles of NFS lands to the proposed Haskell Canyon Switching Station. As requested by the USFS, all portions of this segment that fall within the northern and southern borders of the ANF would be constructed entirely by the use of helicopters. The helicopter construction requirement was established by the USFS for consistency of transmission line construction within the existing Antelope-Pardee transmission line corridor. No new access roads would be constructed except those required for pulling and tensioning sites or staging locations for construction materials. The addition of the 115th Street Segment, described above, splits the Segment into H1 (northern portion) and H2 (southern portion).

Segment I is 32 miles long. It begins near the Antelope Substation at the intersection of Segments F and H, and heads southeast through the City of Palmdale, parallel SCE's existing high voltage transmission lines (Midway-Vincent 500 kV, Antelope-Vincent 230 kV, and Antelope-Mesa 230 kV). The segment continues directly south to an existing LADWP transmission line corridor, then continues in a southeast direction to the proposed Haskell Canyon Switching Station, parallel LADWP's existing high voltage transmission lines (Victorville-Rinaldi 500 kV and Adelanto-Rinaldi 230 kV). A majority of this segment would be located outside of NFS lands. Two miles would be located on NFS lands.

Segment J is located parallel to the southern portion of Segment D. Segment J would consist of a new single 230 kV circuit to be placed on existing double-circuit towers between Castaic Power Plant and the proposed Haskell Canyon Switching Station (see discussion in Section 1.2.2 below).

Three-Circuit Tower Mitigation

In areas where there are ROW expansion constraints and where LADWP has existing 230 kV transmission lines, LADWP is proposing to construct three-circuit towers within the existing ROW to carry the existing BR-RIN circuit and the two proposed Barren Ridge to Haskell Canyon (BR-HC) circuits. This would avoid various impacts, including the acquisition of residential property in the unincorporated communities of Willow Springs (milepost 27.1 to 27.6) and Elizabeth Lake and Green Valley (milepost 44.6 to 51.7). Refer to Figure 1-6 for an illustration of three-circuit tower types, and to Figure 1-7, the Three-Circuit Tower Mitigation Map, for proposed locations.

FIGURE 1-6. THREE-CIRCUIT TOWER TYPES

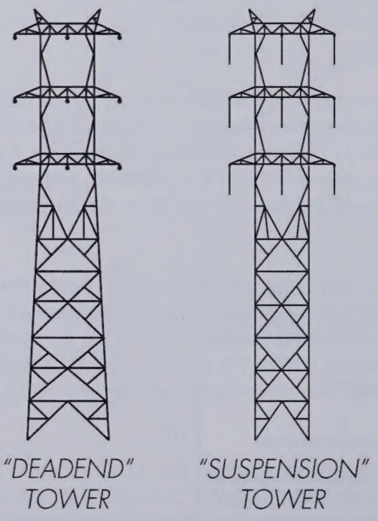
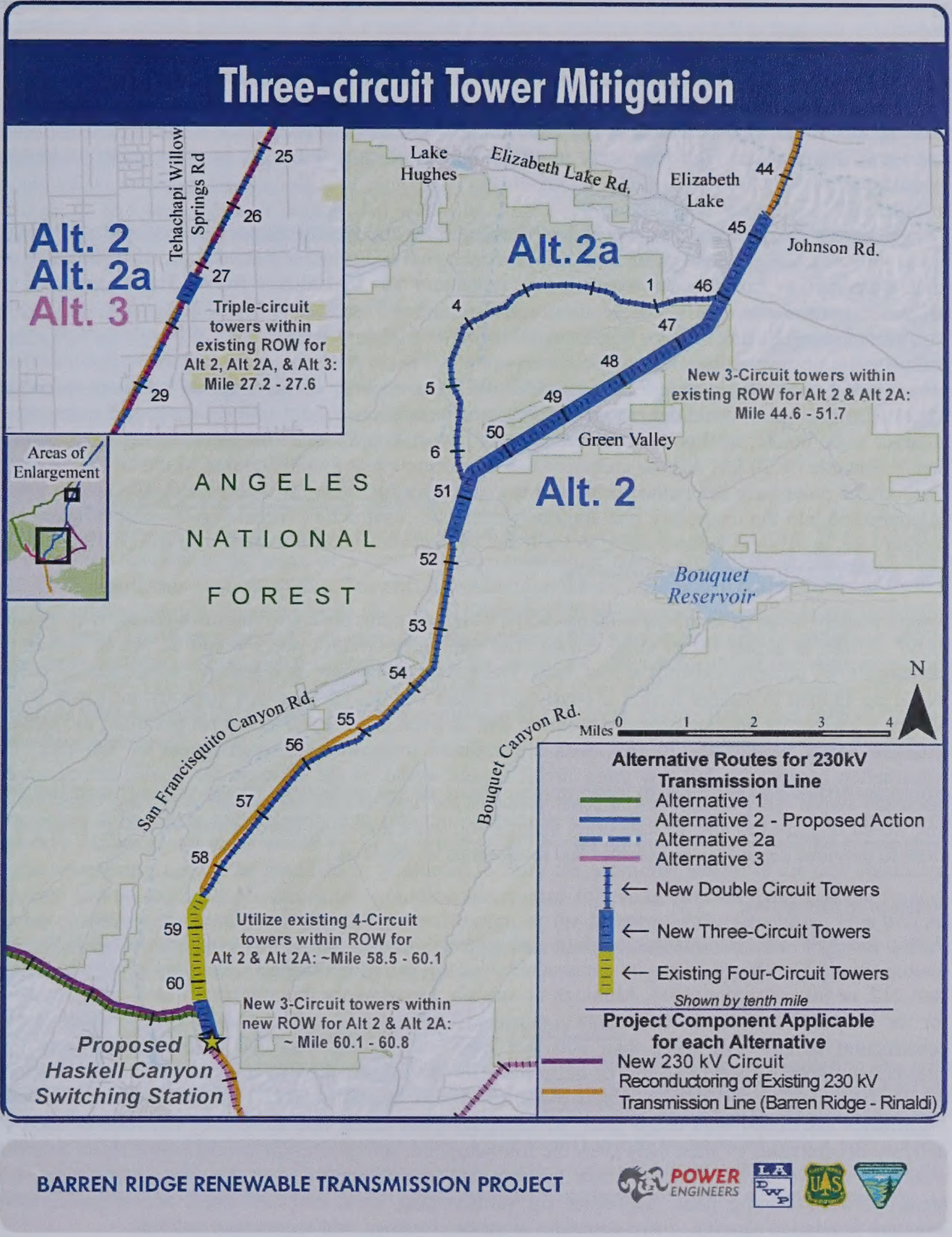


FIGURE 1-7. THREE-CIRCUIT TOWER MITIGATION


Three-circuit Tower Mitigation
Alt. 2
Alt. 2a
Alt. 3
Tehachapi Willow Springs Rd
25
26
27
29
Triple-circuit towers within existing ROW for Alt 2, Alt 2A, & Alt 3: Mile 27.2 - 27.6
Areas of Enlargement
Lake Hughes
Elizabeth Lake Rd.
Elizabeth Lake
Johnson Rd.
Alt.2a
44
45
46
1
47
48
49
50
4
5
6
51
52
53
54
55
56
57
58
59
60
New 3-Circuit towers within existing ROW for Alt 2 & Alt 2A: Mile 44.6 - 51.7
Green Valley
Alt. 2
ANGELES NATIONAL FOREST
Bouquet Reservoir
San Francisquito Canyon Rd.
Bouquet Canyon Rd.
Miles 0 1 2 3 4
N
Utilize existing 4-Circuit towers within ROW for Alt 2 & Alt 2A: ~Mile 58.5 - 60.1
New 3-Circuit towers within new ROW for Alt 2 & Alt 2A: ~ Mile 60.1 - 60.8
Proposed Haskell Canyon Switching Station
Alternative Routes for 230kV Transmission Line
Alternative 1
Alternative 2 - Proposed Action
Alternative 2a
Alternative 3
← New Double Circuit Towers
← New Three-Circuit Towers
← Existing Four-Circuit Towers
Shown by tenth mile
Project Component Applicable for each Alternative
New 230 kV Circuit
Reconductoring of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
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LADWP must maintain the electrical service along the existing BR-RIN transmission line to avoid impacts to the hydroelectric power plants north of the Barren Ridge Switching Station. Therefore, a temporary transmission line would be constructed to keep the BR-RIN circuit energized during construction of the three-circuit towers. After the temporary line is constructed, the existing BR-RIN single-circuit towers would be removed to allow the new three-circuit towers to be constructed within the existing ROW. Once construction of the three-circuit towers is completed, the temporary transmission line would be removed. The temporary transmission line is expected to be in place from six to nine months.

The temporary transmission line would be 7.5 miles long and would consist of wood and steel single poles with an average height of 95 feet, a 3-foot by 3-foot footprint, and an average of eight poles per mile. Construction would occur within a new temporary 80- to 100-foot ROW. The majority of the temporary transmission line would be constructed along San Francisquito Road. Portions would also be constructed along Elizabeth Lake Road and Johnson Road. Pole placement would be adjacent to public roadways wherever possible. If necessary, temporary ROW on private property would be needed where poles could not be placed within public road ROW. The majority of poles would be direct-embedded when set in place and would not require a permanent foundation. Where additional strength is necessary at larger angle points, steel poles would be required, which could require an excavation approximately 6 feet in diameter by 20 feet deep to accommodate the concrete pier foundation that would be cast in place. Once all the poles have been constructed and the conductor installed, the existing BR-RIN circuit would be connected into the temporary line and energized. The construction would require establishment of a staging area, work areas around poles, and pull and tension sites. Access to pole sites and pull and tension sites would be from the adjacent roadways.

Approximately seven miles of the existing BR-RIN single-circuit towers would be removed, with existing ROW utilized to access the existing towers. The new three-circuit towers would be placed within the existing ROW, utilizing existing access roads. Helicopter Mitigation, as described in this section below, would be applied in steeper terrain if additional access is required. The new three-circuit tower would require a 25-foot by 30-foot structure footprint and an average of seven structures per mile; the average structure height would be 170 feet, with a maximum tower-to-tower span length of 780 feet. The construction process for the new three-circuit towers would be the same as the double-circuit towers discussed above. After completion of construction of the three-circuit towers, the temporary transmission line would be removed and all temporary staging and work area land disturbances would be restored as close to previous conditions as possible and revegetated as required.

Helicopter Mitigation

Within the ANF where the terrain is steep and access is limited, the USFS would require that the new double-circuit 230 kV structures be constructed with the use of helicopters (such as the Hughes 500 or Bell 212, or Sikorsky Skycrane). Although no specific locations for this mitigation have been identified for the Proposed Action, as defined, it is expected USFS would require the helicopter mitigation for construction in any area more than 300 feet from an existing road and with slopes greater than approximately 25 percent. The use of helicopters for the construction of transmission tower structures would eliminate the need for new access roads to structure locations, and would therefore minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites. However, the following site and ground disturbing construction activities would be required to construct the new transmission line within the identified helicopter construction areas: portable landing pads, helicopter fly yards/staging areas and associated access roads, tower structure vegetation clearing, guard structures at major crossings, and access road pullouts.

Temporary 24-foot wide access roads would be required to access the helicopter fly yards/staging areas. The transmission line materials (tower steel, conductor reels, structure hardware, etc.) would be delivered by truck to the helicopter fly yards/staging areas. Vegetation clearing may be required at these sites to

ensure safe working conditions. The fly yards/staging areas would serve as helicopter support yards for fueling and maintenance, as well as for the transport of materials and personnel. Towers may also be assembled in sections at these yards prior to delivery to the tower sites. Heavy lift helicopters would then fly the towers from the yards to the tower sites.

Portable landing pads would be located at each tower site. These pads would allow helicopters to load and unload personnel, tools, and equipment necessary for construction of foundations and assembly of tower structures. Helicopter-constructed towers that would not be in close proximity to existing access roads would utilize micropile foundations. For each tower leg, micropile foundations would use a group of three to eight 6- to 9-inch diameter casings that would be drilled and grouted into the ground. The exposed portion of the pile group would be encased in a reinforced concrete cap from the top of the casings to a depth anywhere from one to eight feet below the ground surface, depending on the terrain.

Conductor installation would proceed in the same manner as the double-circuit tower installation. The equipment necessary for conductor installation would be large, heavy construction equipment that could only be brought in by truck. Some NFS roads could need maintenance or improvement to allow pulling and tensioning, but no new access or spur roads would be created for conductor installation on the helicopter-constructed towers. After project completion, any maintained access roads to helicopter fly yards/staging areas to would be reduced to 16 feet.

1.2.2. Addition of New 230 kV Circuit

Between the proposed Haskell Canyon Switching Station and the existing Castaic Power Plant, LADWP proposes the addition of 12 miles of a new 230 kV transmission circuit onto existing Castaic – Olive 230 kV Transmission Line structures. The circuit would cross the unincorporated communities of Castaic and Saugus and the city of Santa Clarita. A total of 300 feet of BLM-managed public lands and four miles of NFS lands would be traversed; however, the new circuit would not require a new or additional ROW. This new circuit would be called Castaic – Haskell Canyon #4 and would utilize the same conductor (bundled 715.5 kcmil "Starling" ACSS/AW [aluminum conductor steel supported/aluminum-clad steel wire]) as that proposed for the new 230 kV transmission line between Barren Ridge and Haskell Canyon Switching Stations.

The addition of a new circuit on existing towers would require many of the same construction activities associated with a new transmission line (refer to Appendix C for a description of each construction activity). However, all work would be within existing ROW and no new towers would be constructed. Some towers may need to be modified or reinforced to carry the additional weight of the new conductor. Specific towers requiring reinforcement would be determined following detailed design of the Project. Tower reinforcement would not alter the general design or the location of the structures. This process would generally include reinforced foundations or steel member replacements. Refer to Figure 1-1 for a map showing the location of the new 230 kV circuit.

1.2.3. Reconductoring of Existing Transmission Line

LADWP proposes the reconductoring of 76 miles of the existing BR-RIN 230 kV transmission line with larger conductors from the Barren Ridge Switching Station to Rinaldi Substation. Four miles of BLM-managed public lands, 13 miles of National Forest System (NFS) lands, and 44 miles of private property would be traversed. The existing conductors (954/ 2,312 kcmil) would be replaced with a new 1,433.6 kcmil "Merrimack" ACSS/TW/HS (aluminum conductor steel supported/trapezoidal wires/high strength) conductor. The new conductor would have a larger diameter that allows for greater electrical capacity.

The upgrade of the existing BR-RIN would also require many of the same activities of the new transmission line (surveying of right-of-way [ROW], rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, and cleanup). Removal of the existing conductor would be used to string a pulling line, and this line would then be used to pull in the new conductor. All work would

remain within the existing 250-foot-wide ROW, with no additional ROW required. Some of the towers would need to be modified, replaced, and/or have foundations reinforced or replaced to carry the additional weight of the new heavier conductor. Refer to Figure 1-1 for the location of the reconductoring.

1.2.4. Construction of New Switching Station

As a component of the BRRTP, LADWP proposes the construction of a new switching station in Haskell Canyon, south of the Angeles National Forest on LADWP-owned property at the convergence of several existing and proposed 230 kV transmission lines (the existing BR-RIN, the proposed double-circuit Barren Ridge – Haskell Canyon, existing Castaic – Northridge, Castaic – Sylmar, Castaic – Olive, and the proposed Castaic – Haskell Canyon). Refer to Figure 1-1 for the location of the new switching station.

The station would be approximately 500 feet by 600 feet to accommodate the necessary circuit positions, which are made up of equipment, such as steel support structures, circuit breakers, disconnect switches, and associated equipment, and a relay house and control house containing control and protective relaying equipment. The relay and control houses would each be approximately 30 feet long by 12 feet wide by 10 feet high and constructed of gray concrete block. The station yard would include a paved internal access road approximately 16 feet wide and would be enclosed by chain-link fencing with barbed-wire extension for security. The preliminary grading plan for the station is located in Appendix C.

Necessary pre-construction geotechnical investigation on-site would include six borings by a drill rig to investigate bedrock and soil stability and four cone penetration test locations after site grading to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

Construction of the new Haskell Canyon Switching Station would consist of preconstruction surveys, clearing and grading of access roads, site grading and drainage development, installation of concrete foundations and steel support structures, installation of below- and above-ground electrical conduits for equipment power and control, installation of below- and above-grade grounding conductors, and installation of control and relay houses. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks, and flatbed trailers. Cranes, man-lifts, portable welding units, line trucks, and mechanic trucks would also be required. Construction would require an estimated 12 months with approximately 60 workers.

Site preparation work for the station would involve clearing and grading of access roads, clearing of the switchyard site, the cut and fill grading of the site, and placement and compaction of structural fill that would serve as a base for switching station facilities. The site would be graded to maintain current drainage patterns as much as possible. A 16-foot-wide paved road and a 100-foot by 100-foot gravel parking area would be required. The yard would be covered with crushed-rock aggregate. Native vegetation would be re-established where possible outside the switchyard fence.

Following site grading and development, reinforced concrete foundations would be installed to support the steel structures and electrical equipment and control facilities. It is estimated that 1,500 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 180 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 120-day working period. Subsequent to the foundation installation, trenches would be dug to facilitate placement of copper conductors for the station grounding mat.

Multiple transmission lines would be terminated into the switching station (i.e., the new and existing Barren Ridge – Haskell and Castaic – Haskell Canyon transmission lines) and would need support and require the installation of galvanized steel structures. An existing 115 kV transmission line may need to

be relocated around the proposed station. High-voltage bus work consisting of aluminum jumpers and tubing would be installed within the station.

1.2.5. Expansion of Existing Switching Station

LADWP proposes expansion of the existing Barren Ridge Switching Station to the east side by 235 feet by 500 feet, for a total station size of 485 feet by 500 feet (approximately 5.6 acres). The expansion area of the station would include electrical structures and equipment for the addition of transmission lines, a material staging area, roadway within the station, and a drainage area. The preliminary design layout for the station may be found in Appendix C. Refer to Figure 1-1 for the location of the existing switching station.

Expansion of the existing switching station would be very similar to the construction of the Haskell Canyon Switching Station as described above. Expansion would consist of preconstruction surveys, site preparation and grading, installation of reinforced concrete foundations, installation of electrical conduits for equipment power and control, and installation of structures and equipment.

Necessary pre-construction geotechnical on-site investigation would include two test pits excavated by a backhoe to investigate soil density and settlement, and four cone penetration test locations on-site to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

It is estimated that 700 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 80 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 90-day working period. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks, and flatbed trailers. Cranes, man-lifts, portable-welding units, line trucks, and mechanic trucks would also be required. An estimated eight months with approximately 60 workers would be required to expand the station.

1.2.6. Project-Wide Mitigation Measures

To address potential impacts of the Proposed Project to multiple resource areas as discussed above, the following project-wide mitigation measure would be applied:

> Three-Circuit Tower Mitigation (THREE-CIRCUIT) – A three-circuit lattice tower design would be implemented as described in Section 1.2.1 of this Technical Report, at the locations shown in Figure 1-7, Three-Circuit Tower Mitigation Map.
>
> Helicopter Mitigation (HELICOPTER) – Helicopter Mitigation shall be implemented, as described in Section 1.2.1 of this Technical Report, in steep areas of the Angeles National Forest where access is limited. For Alternatives 1 and 2a, implementation would occur at the locations shown on Figure 8-2, Identified Helicopter Mitigation Map. During final design of the Project, areas other than those shown on Figure 8-2, including Alternatives 2 and 3, may potentially require helicopter construction of the towers. This determination would generally be made where tower sites have no existing access roads within 300 feet and slopes are greater than 25 percent. Final identification of these tower sites would be determined and agreed upon by USFS, BLM and LADWP.

1.2.7. Construction Work Force and Schedule

The NEPA Record of Decision and CEQA Notice of Determination (anticipated in the early part of 2012) must be made before construction could begin. Therefore, construction of the BRRTP is anticipated to

begin no sooner than summer 2012, with a target in-service date of early 2015. These dates are subject to change based on actual completion of design.

The following construction estimates were based on preliminary engineering and the number of workers and construction duration values are estimates; therefore, they are subject to change based on final engineering and design. The new double-circuit 230 kV transmission line from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station would require 12.5 months and 134 workers. The installation of a 230 kV circuit on existing double-circuit towers from the Castaic Power Plant to the proposed Haskell Canyon Switching Station would require a month and a half and 35 workers. The upgrade and reconductoring of the existing BR-RIN would require eight months and 155 workers. The construction of a new 400-foot by 600-foot Haskell Canyon Switching Station would require 12 months and 60 workers. The expansion of the existing Barren Ridge Switching Station would require eight months and 60 workers.

The BRRTP components are anticipated to be constructed in the staggered sequence illustrated below in Tables 1-1 and 1-2. The construction of all Project components would take approximately two years and 447 total workers, with 173 workers at the peak of construction. Table 1-2 summarizes the BRRTP's anticipated construction workforce and schedule based on the most current information available. To allow for any delays in the Project, three weeks of float time were included for the new 230 kV transmission line and reconductoring efforts, and an additional two weeks of float time were included for the stringing of the second circuit between Castaic Power Plant and Haskell Canyon.

TABLE 1-1. ANTICIPATED CONSTRUCTION SEQUENCE

PROJECT COMPONENT	ANTICIPATED CONSTRUCTION SEQUENCE
Expansion of Barren Ridge Switching Station	Weeks 8 – 73
New Haskell Canyon Switching Station	Weeks 1 – 67
New 230 kV Transmission Line	Weeks 42 – 113
Reconductor BR-RIN	Weeks 55 – 88
Addition of 230 kV Circuit	Weeks 51 – 56

TABLE 1-2. CONSTRUCTION WORKFORCE AND SCHEDULE

PROJECT COMPONENT	CONSTRUCTION (START AND END WEEKS)	CONSTRUCTION DURATION (MONTHS)	TOTAL # OF WORKERS	PEAK # OF WORKERS AT ANY GIVEN TIME
Expansion of Barren Ridge Switching Station	8 – 73	15	60	38
New Haskell Canyon Switching Station	1 – 67	15.4	63	38
New 230 kV Transmission Line	42 – 113	16.5	134	131
Reconductor BR-RIN	55 -88	9	155	120
Addition of 230 kV Circuit	51 – 56	1.5	35	35
ALL COMPONENTS	**Weeks 1 – 113**	**26.1 months**	**447 Total Workers**	**173* Peak Workers**

*The value represents the total for the staggered construction of the Project components; it is not reflective of the sum of all the components.

2.0 REGULATORY FRAMEWORK

Primary state guidance relating to principal seismic hazards evaluated in this report is contained in the 1990 Seismic Hazards Mapping Act and 1994 Alquist-Priolo Earthquake Fault Zoning Act (originally enacted in 1972). The Seismic Hazards Mapping Act focuses on potential seismic hazards related to strong ground shaking, liquefaction, and seismically induced landslides. Under provisions in the act, the State is charged with designating and mapping areas at risk for these seismic hazards and the maps and associated reports are to be used by cities and counties in preparing their general plans and adopting land use policies to reduce and mitigate potential hazards to public safety. The California Geological Survey (CGS) has provided Seismic Hazard Zones maps for some quadrangles located in the southern part of the proposed Project area, and these maps are incorporated into this study for evaluation of liquefaction hazard zones and earthquake-induced landslide hazard zones. Some quadrangles in the Project area have not yet been mapped by the State.

Under the Alquist-Priolo Earthquake Fault Zoning Act, the state is charged with delineating "Earthquake Fault Zones" (formerly known as Alquist-Priolo Special Studies Zones) along known active, well-defined faults in California. Cities and counties affected by the zones are to regulate certain development projects for sites within the zones until geologic investigations demonstrate that the sites are not threatened by surface displacement from future faulting. The CGS produces maps delineating Earthquake Fault Zones for quadrangles located in the proposed Project area, and these maps are incorporated into the study for evaluation of potential surface fault rupture related to the active Earthquake Fault Zones in the Project area.

Regulatory agencies responsible for overseeing design and construction of the proposed BRRTP would refer to Seismic Hazards Mapping Act and Alquist-Priolo Earthquake Fault Zoning Act guidelines for evaluation of potential seismic hazards that may affect the Project. In addition to the potential seismic impacts under these guidelines, other potential geologic impacts that may affect the Project would be evaluated during the design and construction phases of the Project, and presented to the regulatory agencies for consideration, as appropriate. Other potential geologic impacts that have been assessed in this preliminary geotechnical evaluation include landslides and mudflows, soil erosion, settlement, expansive soils, corrosive soils, groundwater and dam inundation.

3.0 PROJECT AREA OVERVIEW

The Project study area is bounded by Interstate 5 and the ANF to the west, the Tehachapi Mountains and Piute Mountains to the north, State Highway 14 and the San Gabriel Mountains to the east, and the San Fernando Valley area of Los Angeles to the south (Figure 1). Main physiographic features of the Project area include the Mojave Desert and Antelope Valley area; the San Andreas Rift Zone, which strikes northwesterly through the middle of the Project area; the steep mountainous terrain in the ANF; and the valley areas in the cities of Santa Clarita and San Fernando.

The Mojave Desert and Antelope Valley area is generally comprised of relatively gentle to moderate topographic gradients. Elevations in this part of the Project area range from 2,400 to 3,000 feet above mean sea level (MSL) on the valley floor, and up to 3,200 feet MSL along the flanks of the Tehachapi Mountains. The proposed expanded Barren Ridge Switching Station, proposed Segments A, B, C, E, F, 115th, and the northern portions of Segments D, G, H and I are situated in this part of the Project area (Figure 1).

The San Andreas Rift Zone, associated with movement of the active San Andreas fault, comprises a linear trough of elongate valleys and ridges that crosses about the middle of the Project area oriented in a northwest direction. The rift zone essentially forms a boundary between the Mojave Desert/Antelope Valley area and the ANF/Sierra Pelona mountainous area. Segment D and the northern portion of Segments G, H and I cross the San Andreas Rift Zone. Segment D crosses the rift zone in the western part of the Project study area. Segments G, H and I cross the San Andreas Rift Zone in the Leona Valley in the east part of the study area (Figure 1). The rift zone in the Leona Valley is bounded by Portal Ridge and Ritter Ridge on the northeast. Topographic gradients in this area of the Project range from gentle on the floor of the rift zone trough and Leona Valley to steep on the flanking hillsides including the Portal Ridge and Ritter Ridge areas. Elevations in the San Andreas Rift Zone, Portal Ridge and Ritter Ridge areas range from 3,000 to 3,600 feet MSL.

The ANF part of the Project area generally comprises mountainous areas of gentle to very steep topographic gradients and includes the Sierra Pelona, Liebre Mountain and Bald Mountain. Northeast-trending canyons in the ANF part of the Project area include Liebre Gulch, San Francisquito Canyon, Bouquet Canyon, Mint Canyon, Haskell Canyon and Soledad Canyon. Elevations in the ANF part of the study area range from 1,300 feet MSL in canyon bottoms in the Santa Clarita area, to 4,500 feet MSL on the ridgelines in the Sierra Pelona. Segments G, H, I, J, and the southern portion of Segment D are situated in this part of the Project area. The proposed Haskell Canyon Switching Station is located in this part of the Project area at the northern end of Haskell Canyon (Figure 1).

The southern part of the Project area is situated between the Santa Clarita Valley and San Fernando Valley, which comprise areas of relatively gentle to moderate topographic gradients, and includes steep topographic gradients in the San Gabriel Mountains between these valleys. Elevations range from 1,300 feet MSL to 1,500 feet MSL in the Santa Clarita valley area; from 1,500 feet MSL to 2,300 feet MSL in the San Gabriel Mountains between the valleys; and from 1,000 feet MSL to 1,500 feet MSL in the northern San Fernando Valley. Segment K for the proposed reconductoring of the existing 230kV line from the new Haskell Canyon location to Rinaldi is located in this part of the Project area.

4.0 INVENTORY METHODS

To develop a geologic inventory for the proposed BRRTP, this preliminary geotechnical evaluation has included review of soil, geologic and seismic background information and field reconnaissance for assessment of potential geologic and seismic hazards and potential geologic impacts associated with implementation of the Project in the study area. A review of geotechnical background data, geologic maps, topographic maps, regional fault maps, seismic data, soil data, groundwater data, GIS data, and aerial photography was performed to assess the general geologic and seismic conditions within the Project study area and underlying the proposed route corridors and switching stations. Field reconnaissance was performed of accessible areas of the Project components to observe general geologic site conditions, map pertinent geologic features, and check the overall aerial geology presented on geologic maps. Compilation and analysis of the data obtained were performed to evaluate potential Project impacts and develop recommendations for mitigation, as appropriate.

Geologic maps, data and literature published by the CGS, formerly the California Division of Mines & Geology (CDMG), have been incorporated as part of this study for evaluation of the Project area geology, distinctive geologic features, faults, potential liquefaction hazard zones and earthquake-induced landslide hazard zones, mapped landslide or mudflow areas, and groundwater. Data and information from the Southern California Earthquake Center (SCEC) have been utilized for information related to faults. Groundwater data from the California Department of Water Resources (CDWR), where available, have been utilized for evaluation of groundwater levels in the Project study area. Regulations within the California Building Code (CBC) are considered for potential design mitigation recommendations. Geotechnical-related portions of the California Environmental Quality Act (CEQA) have been utilized as a guideline for this evaluation.

Seismic data published by the United States Geological Survey (USGS) have been incorporated in this study for evaluation of potential ground shaking levels in the Project study area. GIS data for potential ground shaking levels were utilized. Topographic maps published by the USGS have been reviewed as part of this study for evaluation of elevations and topographic gradients in the Project area. Soil data from the United States Department of Agriculture (USDA) National Resource Conservation Service (NRCS) have been utilized to evaluate USDA soil classifications, potential soil erosion, expansive soils and corrosive soils. Geotechnical-related portions of the Safety Elements of the Los Angeles County General Plan and Kern County General Plan have been incorporated into this study for evaluation of potential subsidence, and dam failure and seiche inundation hazard areas. Background documents reviewed are presented in the References.

Field reconnaissance of the proposed segments and switching stations sites was performed to supplement the background literature study for this evaluation. Field reconnaissance was limited to portions of segments in the Project area accessible by vehicle on existing transmission line and other access roads. The visual reconnaissance was made to observe general geologic site conditions and topographic conditions, observe conditions of existing transmission line improvements, map pertinent geologic features, and check the general geologic mapping presented on geologic references. Observations were made of the siting area for the proposed Haskell Canyon Switching Station and of the proposed expanded Barren Ridge Switching Station. Field observations were generally made in accessible areas within an approximate ½-mile-wide study corridor along the proposed routes. The field reconnaissance was further supplemented by aerial (helicopter) reconnaissance photographs and notes provided by LADWP geologists for inaccessible portions of some segments of the Project.

5.0 AFFECTED ENVIRONMENT

5.1 REGIONAL GEOLOGIC SETTING

The Project study area is located within two geomorphic regions, or "provinces," characterized by the morphology of the landforms, the general type and age of the geologic materials, and by the tectonic-structural features of the geology in the region. The Transverse Ranges Geomorphic Province and Mojave Desert Geomorphic Province that include the study area are divided by the northwest-trending San Andreas fault zone. The Antelope Valley, Mojave Desert and Barren Ridge part of the study area northeast of the San Andreas fault is located in the western corner of the Mojave Desert Province. The part of the study area southwest of the San Andreas fault, including the ANF, Sierra Pelona, and the cities of Santa Clarita and San Fernando, is within the Transverse Ranges Province.

The Mojave Desert Geomorphic Province is characterized by mountain ranges and hills of moderate relief that are partially buried and separated by broad alluviated basins like the Antelope Valley (Norris and Webb, 1990). This province is bounded in the study area by the San Andreas fault on the southwest and by the Garlock fault on the northwest, forming a triangular-shaped region on the west side of this province. The Mojave Desert Province extends east from the study area. The Transverse Ranges Geomorphic Province is characterized by east-west trending mountain ranges and fault systems (Norris and Webb, 1990). The province is bounded on the northeast by the San Andreas fault, and extends west and south from the study area.

5.2 STUDY AREA GEOLOGIC SETTING

The mountain ranges and hills of the Project study area are comprised primarily of Tertiary age (2 to 65 million years old) marine and non-marine sedimentary and volcanic rocks; Mesozoic era (65 to 245 million years old) granitic rocks; and Paleozoic era (245 to 570 million years old) metamorphic and granitic rocks including schist, gneiss and limestone. Younger Quaternary age (last 1.6 million years) alluvium and other sediments underlie low-lying valley and canyon bottoms, and much of the Mojave Desert and Antelope Valley parts of the study area. A regional geologic map of the study area is shown on Figure 2.

The older, pre-Tertiary age crystalline basement rocks typically comprise granite, quartz monzonite, gabbro, schist, gneiss, and other igneous and metamorphic rocks. Younger Tertiary age volcanic and sedimentary formations of marine and non-marine origin that overlie the basement rocks contain units of sandstone, siltstone, shale, conglomerate, and undifferentiated pyroclastic and intrusive volcanic rocks. Younger Quaternary age alluvium and other deposits overlie the bedrock in the Mojave Desert and Antelope Valley, and other valleys, canyon bottoms and low-lying drainage areas in the study area.

The Quaternary deposits are generally subdivided into two stratigraphic units according to relative age: older Pleistocene (11,000 to 2 million years ago) age deposits, and younger Holocene deposits (last 11,000 years). Older Pleistocene age alluvial deposits generally consist of gravel, sand, silt, and clay that is moderately to well consolidated and often slightly cemented. These materials include older alluvial fan deposits in the Mojave Desert and Antelope Valley, continental terrace deposits, and older lacustrine (lake) or playa deposits. Holocene deposits typically consist of relatively young, poorly consolidated or unconsolidated silt, sand and gravel alluvium, and are anticipated to be present in the study area in washes, valley bottoms, and lakebeds. The Holocene deposits can also include eolian (wind-blown) sands, colluvial (slopewash) deposits, residual soils, and agricultural and fill soils from farming, grading or other man-made activities in the Project area.

In general, the distribution of geologic units in the Project study area, as shown on Figure 2, is such that much of the northern half of the Project study area in the Antelope Valley and Mojave Desert is underlain by Quaternary alluvial sediments. Much of the southern half of the Project study area in the mountainous ANF and Sierra Pelona is underlain by older Tertiary and pre-Tertiary rock formations, with the exception of canyon bottoms and other drainage areas comprising alluvium. The geologic units mapped in the Project area are described in further detail in Table 1, and are listed by geologic symbol for the corridor segments on a 1/10th mile basis in Appendix A.

TABLE 1 – PRINCIPAL GEOLOGIC UNITS IN THE PROJECT STUDY AREA

GEOLOGIC SYMBOL[1]	GEOLOGIC UNIT	DESCRIPTION
Qs	Dune Sand	Recent wind-blown sand (eolian) deposits.
Qa	Alluvium	Unconsolidated, poorly sorted alluvial clay, silt, sand and gravel sediments. Includes fan, flood plain, and streambed deposits; and includes mixture of playa clay and wind-blown sand in some desert areas.
Qpc	Plio-pleistocene non-marine	Varied sedimentary rocks of non-marine origin including shale, siltstone, sandstone, conglomerate and breccia.
Tc, Mc, Oc	Tertiary non-marine	Varied sedimentary rocks of non-marine origin including clay shale, mudstone, siltstone, sandstone, fanglomerate and breccia.
P, M, E, Ep	Tertiary marine	Varied sedimentary rocks of marine origin including shale, mudstone, siltstone, sandstone, and conglomerate.
Ti, Tv, Tvp	Volcanic rocks	Undifferentiated volcanic rocks including rhyolite, andesite, basalt, and pyroclastic rocks; and intrusive volcanic (hypabyssal) rocks of similar composition.
gr-m	Granitic and metamorphic rocks	Undifferentiated gneisses and granitic rocks.
gb, grMz, grPz, grpC	Granitic rocks	Granitic rocks including quartz monzonite, granodiorite, quartz diorite, diorite, gabbro, and anorthosite.
ls/PZ	Paleozoic	Sedimentary and metasedimentary limestone, dolomite and marble. Lenses of marble in granitic and metamorphic rocks in the Tehachapi Mtns.
sch	Schist	Highly foliated, mica-rich schist (Pelona Schist).
m	Metasedimentary rocks	Biotite gneiss, mica schist, quartzite and hornfels.
pC	Gneiss	Coarse and fine augen gneisses, amphibolite, hornfels, diorite and granite gneiss.

Notes: [1] Symbol used on Figure 2.

5.3 SEISMICITY

The Project study area is situated within a seismically active region of southern California, and numerous active and potentially active faults have been mapped within or adjacent to the study area. As defined by the CGS, an active fault is one that has had surface displacement within Holocene time (roughly the last 11,000 years). Potentially active faults are those that show evidence of surface displacement during Quaternary time (roughly the last 1.6 million years) but for which evidence of Holocene movement has not been established. An inactive fault is one that has not shown evidence of surface displacement during Quaternary time.

The approximate locations of the principal active faults in the region and their geographic relationship to the study area are shown on Figure 3. Table 2 lists nearby principal faults, the maximum moment magnitude (M_{max}), the fault type, the slip rate, the fault source type, and significant historic earthquakes that have occurred on the faults.

TABLE 2 – PRINCIPAL REGIONAL ACTIVE AND POTENTIALLY ACTIVE FAULTS

FAULT	APPROXIMATE DISTANCE TO NEARBY SEGMENT (SEGMENT) (miles) [1]	MAXIMUM MOMENT MAGNITUDE (M_{max}) [2]	FAULT TYPE[2]	SLIP RATE (mm/yr) [2]	SIGNIFICANT HISTORIC EARTHQUAKES[3]
Big Pine	14.5 (D)	6.9	SS	0.8	-
Clamshell – Sawpit Canyon	28.0 (I)	6.5	R	0.5	M5.8 Sierra Madre, 6/28/91
Garlock (West) Fault Zone	0.0 (A)	7.3	SS	6.0	-
Helendale-South Lockhart	26.0 (A)	7.3	SS	0.6	-
Lenwood-Lockhart-Old Woman Springs	16.0 (A)	7.5	SS	0.6	-
Malibu-Santa Monica-Hollywood –Raymond Fault Zone[4]	14.0 (K)	6.7	RO	0.4	-
Northridge (East Oak Ridge)	14.5 (D)	7.0	R	1.5	M6.7 Northridge, 1/17/94
Pleito Thrust	14.5 (D)	7.0	R	2.0	-
San Andreas (Mojave - 1857 Rupture)	0.0 (D, G, H, I)	7.4	SS	30	M7.9 Fort Tejon, 1/9/1857
San Cayetano	10.0 (D)	7.0	R	6.0	-
San Gabriel	1.0 (D)	7.2	SS	1.0	-
San Fernando Fault Zone[2]	0.0 (K)	6.8	R	5.0	M6.6 San Fernando, 2/9/71
Santa Susana	1.0 (K)	6.7	R	5.0	M6.6 San Fernando, 2/9/71
Santa Ynez (East)	11.0 (D)	7.1	SS	2.0	-
Sierra Madre	7.0 (K)	7.2	R	2.0	-
Sierra Madre (San Fernando)	5.0 (K)	6.7	R	2.0	-
Southern Sierra Nevada	4.0 (A)	7.3	N	0.1	-
Verdugo	3.0 (K)	6.9	R	0.5	-
White Wolf	24.5 (A)	7.3	RO	2.0	M7.5 Kern County, 7/21/52

Notes:
SS – Strike Slip R – Reverse
N -- Normal RO – Reverse-Oblique

References:
[1] Jennings, 2010. [3] SCEC, 2004
[2] Cao, et al, 2003 [4] Dolan, et al, 2000a, 2002

Principal active faults in the region that may affect the site are described below:

San Andreas Fault Zone

The San Andreas fault zone has long been recognized as the dominant seismotectonic feature in California. This active, right-lateral, strike-slip fault is over 700 miles long and strikes northwest through the state from the Gulf of California to north of San Francisco. Two of California's three largest historic earthquakes, the 1906 San Francisco earthquake and the 1857 Forth Tejon earthquake, occurred along the San Andreas fault (SCEC, 2004). The slip rate of the fault is estimated to be 30 millimeters (mm) per year (Cao, 2003). The fault is considered capable of producing earthquakes in excess of M_{max} 7.4, and the average frequency of earthquakes along this segment of the San Andreas fault is 140 years (SCEC, 2004). The San Andreas fault crosses Segments D, G, H and I through the middle of the Project study area, oriented in a northwesterly direction (Figure 3).

Garlock Fault Zone (West)

The Garlock fault zone is a prominent fault feature in southern California and strikes northeast across the northern part of the Mojave Desert province. Although this fault has not produced large earthquakes historically, geomorphic and stratigraphic evidence indicates that it has done so in the past. The Garlock (West) fault is considered capable of generating about a M_{max} 7.3 earthquake. A portion of the Garlock fault zone near the Project study area ruptured due to the 1952 Kern County Earthquake that occurred on the White Wolf Fault (SCEC, 2004). A total of about 30 to 40 miles of left-lateral, strike slip has been documented across the Garlock (West) fault, and the slip rate is estimated to be 6 mm per year. The Garlock (West) fault zone crosses Segment A at the northern end of the segment near Barren Ridge.

San Fernando Fault Zone

The San Fernando fault zone is a zone of thrust faulting and ground rupture areas related to the 1971 San Fernando earthquake, and is located in the Sunland and San Fernando area of the San Fernando Valley (SCEC, 2004). The zone is 10 miles long, has an estimated slip rate of 5 mm per year, and is considered capable of generating about a M_{max} 6.8 earthquake (SCEC, 2004). The San Fernando fault zone crosses the southern end of Segment K in the San Fernando area.

Santa Susana Fault

The Santa Susana fault is a thrust fault 23 miles long located near the communities of Piru, Sylmar, and San Fernando. A short segment of the fault ruptured slightly during the 1971 San Fernando earthquake (SCEC, 2004). The Santa Susana fault is considered capable of generating about a M_{max} 6.7 earthquake. The slip rate of the fault is estimated to be 5 mm per year. The Santa Susana fault is located near the south end of the Project study area west of the Rinaldi substation.

San Gabriel Fault Zone

Segments of the San Gabriel fault zone are described as potentially active, and a portion of the fault between Castaic and Saugus is described as active (Jennings, 1994). This right-lateral, strike-slip fault is considered capable of producing a M_{max} 7.2 earthquake. The San Gabriel fault has a total length of 87 miles, and the slip rate of the fault is estimated to be 1 mm per year. The San Gabriel fault zone crosses Segment K.

Sierra Madre Fault Zone

The Sierra Madre fault zone is composed of a series of active reverse faults. The 35-mile-long fault zone is located between the cities of Sunland and Azusa along the foothills of the San Gabriel Mountains. The Sierra Madre fault is considered capable of generating about a M_{max} 7.2 earthquake. The slip rate of the fault is estimated to be 2 mm per year. The Sierra Madre fault is located southeast of the Project study area.

White Wolf Fault

The White Wolf fault is an active, left-lateral reverse fault located northwest of the Project study area near the community of Tehachapi. The White Wolf fault was the source of one of the largest earthquakes in Southern California history, the 1952 M 7.5 Kern County earthquake (SCEC, 2004). The Tehachapi area reportedly experienced extensive property damage due to the 1952 Kern County earthquake (Kern County, 2005). The White Wolf fault is considered capable of generating about a M_{max} 7.5 earthquake. The fault is 37 miles in length and has an estimated slip rate of 2 mm per year.

Pleito Thrust Fault Zone

The Pleito Thrust fault zone is a south-dipping, active thrust fault that is part of a complex zone of thrust faults and folds which mark part of the southern end of the Central Valley of California. The Pleito thrust may be connected at depth with the nearby, and similar, Wheeler Ridge fault. At the eastern end of the fault, it may dive below the surface as a blind thrust, forming the northern scarp of the Tehachapi Mountains (SCEC, 2004). The Pleito thrust is considered capable of generating about a M_{max} 7.0 earthquake, and has an estimated slip rate of 2.0 mm per year (Cao, 2003). The Pleito thrust fault zone is 28 miles in length is located west of the Project study area.

Lenwood-Lockhart-Old Woman Springs Faults

The Lenwood, Lockhart, and Old Woman Spring faults are right-lateral, strike-slip faults that form a connected, fairly complex, fault system 99 miles long (SCEC, 2004). The Lenwood-Lockhart-Old Woman Spring fault system is considered capable of generating about a M_{max} 7.5 earthquake. The slip rate of the fault is estimated to be 0.6 mm per year (Cao, 2003). Portions of this fault system located in the Mojave Desert east of Barren Ridge are considered active (Jennings, 1994).

Helendale-South Lockhart Faults

The active Helendale fault is a right-lateral, strike-slip fault about 56 miles in length and may form a roughly continuous fault system with the active South Lockhart fault located east of Barren Ridge in the study area (SCEC, 2004). This fault system is considered capable of producing a M_{max} 7.3 earthquake. The slip rate of the fault is estimated to be 0.6 mm per year (Cao, 2003). The Helendale-South Lockhart faults are located in the Mojave Desert east of the Project study area.

San Cayetano Fault

The San Cayetano fault is a thrust fault 28 miles long located near the communities of Piru, Fillmore, and Ojai. The San Cayetano fault is considered capable of generating about a M_{max} 7.0 earthquake. The slip rate of the fault is estimated to be 6 mm per year. The San Cayetano fault is located west of the Project study area.

Malibu-Santa Monica-Raymond Fault Zone

The Malibu Coast, Santa Monica, Hollywood, and Raymond faults are considered a fault zone that is a subsystem of the Transverse Ranges Southern Boundary fault system (Dolan, et al, 2000). The fault zone extends sub-parallel to the Malibu coastline easterly along the south side of the Santa Monica Mountains through Malibu, Santa Monica, West Los Angeles, and Hollywood. The fault system exhibits reverse left-lateral movement and is considered capable of generating earthquakes ranging from M 6.4 to 6.7 in the Project area (Cao, 2003).

5.4 DATA INVENTORY RESULTS - SEGMENTS

5.4.1. Geologic Resources

Soils

Soils are present at the ground surface along the majority of the proposed Project segments except in locations where rock formations are exposed. In a general sense, deeper soils are present in the valleys and other low-lying areas of the Project, and shallow soils are present in the mountainous parts of the Project study area. The soils underlying the proposed Project segments are comprised of variable material types from gravel and sand to silt and clay, and are generally reflective of the underlying geologic unit, extent of weathering, degree of slope, and the degree of human modification. The proposed Project segments traverse varied terrain and land areas comprised of undeveloped desert and mountain areas, agricultural land, developed rural properties, and developed urban areas consisting of industrial, commercial and residential uses.

In order to inventory the soils underlying the Project segments, data from the NRCS was evaluated. Soil surveys from the NRCS utilized for the evaluation included Kern County, Southeastern Part (CA670), Antelope Valley Area (CA675), ANF (CA776), and Los Angeles County, West San Fernando Valley (CA676). More than 125 soil types are mapped underlying the proposed Project segments, and an inventory of these individual soils, including a general description of the soil, the soil erodibility potential, shrink-swell potential, and corrosion potential, is provided for the segments on a 1/10th mile basis on the USDA Soil Table in Appendix B. A summary of NRCS U.S. General Soil Types (soil families) for each segment and for the switching stations is presented in Table 3, and is shown on the Regional Soils Map on Figure 4.

TABLE 3 – SUMMARY OF U.S. DEPARTMENT OF AGRICULTURE U.S. GENERAL SOIL TYPES[1]

SEGMENT/LOCATION	U.S. GENERAL SOIL TYPES
A	Wasco-Rosamond-Cajon (s1024) Tunis-Trigger-Torriorthents-Rock Outcrop (s766) Neuralia-Garlock-Cajon-Alko (s769)
B	Wasco-Rosamond-Cajon (s1024) Neuralia-Garlock-Cajon-Alko (s769) Rosamond Variant-Rosamond Playas-Gila-Cajon Variant-Cajon (s768) Ramona-Hanford-Greenfield (s1009)
C	Wasco-Rosamond-Cajon (s1024) Neuralia-Garlock-Cajon-Alko (s769) Ramona-Hanford-Greenfield (s1009)
D	Ramona-Hanford-Greenfield (s1009) Oak Glen-Gullied Land-Gorman-Gaviota-Cushenbury (s1034) Gaviota-Cieneba-Capistrano-Caperton (s1055) Sobrante-Exchequer-Cieneba (s1054) Xerofluvents-Salinas-Pico-Mocho-Metz-Anacapa (s909)
E	Wasco-Rosamond-Cajon (s1024) Ramona-Hanford-Greenfield (s1009)
F	Ramona-Hanford-Greenfield (s1009)
115th	Ramona-Hanford-Greenfield (s1009) Gaviota-Cieneba-Capistrano-Caperton (s1055)
G	Ramona-Hanford-Greenfield (s1009) Gaviota-Cieneba-Capistrano-Caperton (s1055) Wilshire-Soboba-Oak Glen-Avawatz (s1047) Stonyford-Rock Outcrop-Chilao (s1056) Sobrante-Lodo (s1057) Sobrante-Exchequer-Cieneba (s1054)
2a	Gaviota-Cieneba-Capistrano-Caperton (s1055)
H	Gaviota-Cieneba-Capistrano-Caperton (s1055) Wilshire-Soboba-Oak Glen-Avawatz (s1047) Sobrante-Lodo (s1057) Sobrante-Exchequer-Cieneba (s1054)
I	Ramona-Hanford-Greenfield (s1009) Gaviota-Cieneba-Capistrano-Caperton (s1055) Sobrante-Lodo (s1057) Pismo-Etsel Family-Cieneba-Caperton (s1059) Xerofluvents-Salinas-Pico-Mocho-Metz-Anacapa (s909) Sobrante-Exchequer-Cieneba (s1054)
J	Sobrante-Exchequer-Cieneba (s1054) Xerofluvents-Salinas-Pico-Mocho-Metz-Anacapa (s909)
K	Sobrante-Exchequer-Cieneba (s1054) Xerofluvents-Salinas-Pico-Mocho-Metz-Anacapa (s909) Pismo-Etsel Family-Cieneba-Caperton (s1059)

SEGMENT/LOCATION	U.S. GENERAL SOIL TYPES
	Zamora-Urban Land-Ramona (s1033) Urban Land-Sorrento-Hanford (s1026)
Haskell Canyon Switching Station	Sobrante-Exchequer-Cieneba (s1054)
Barren Ridge Switching Station	Wasco-Rosamond-Cajon (s1024)

Notes:
[1] USDA, 2006.

Distinctive Geologic Features

This geologic resource refers to the potential existence of distinctive, prominent geologic features, which may have beneficial aesthetic or scientific characteristics. Distinctive geologic features can include unique marker beds, scenic rock formations or significant outcrops. In addition to the positive aesthetic characteristics of distinctive rock formations, these features provide access for geologists and the public to observe and study the underlying rock formation or geologic structure of an area where it may otherwise be concealed by soil cover.

Based on background review and limited field reconnaissance, there are distinctive geologic features that are present in some of the rock formations in the Project study area. Geologic features traversed by the proposed segments in the BRRTP study area that are considered distinctive include white tuff (volcanic ash) marker beds that are mapped in the Bouquet Canyon/Vasquez Canyon area along Segment I. The white tuff marker beds that are present along Segment I are considered a distinctive aesthetic feature due to their white color and the characteristic formation that outcrops (juts out of the ground) in the Bouquet Canyon/Vasquez Canyon bottom. This rock unit is also reported to contain vertebrate fossils. The evaluation of this rock unit as a paleontological resource is provided in the paleontological technical report.

Rock formations in the Project study area are present in the southern part of Segment D, and in Segments G, 2a, H, I, J, and portions of Segment K. The majority of these geologic formations contains more common rock outcrops, exposed road cuts and soil-covered areas, and is not considered highly distinct. However, distinctive geologic features may be present in limited areas of some rock formations in the Project study area not indicated on geologic maps or observed during field reconnaissance. The Mojave Desert and Antelope Valley portions of the Project, and other low-lying valley areas with alluvium and soil cover do not comprise rock formations at the ground surface and do not contain distinctive geologic features.

Distinctive geologic features were not observed at the location of the proposed expanded Barren Ridge Switching Station and were not observed at the site of the proposed Haskell Canyon Switching Station. A summary of distinctive geologic features is presented in Table 4, and is provided for the corridor segments on a 1/10th mile basis on the Impact Assessment Table in Appendix A.

TABLE 4 – SUMMARY OF DISTINCTIVE GEOLOGIC FEATURES

SEGMENT	DISTINCTIVE GEOLOGIC FEATURES[1]
A	None
B	None
C	None
D	None
E	None
F	None
115th	None
G	None
2a	None
H	None
I	White tuff marker beds from mileposts 27.0 to 27.1, 28.6 to 28.9
J	None
K	None

Notes:

[1] Dibblee, 1997c, 1997f, 2002b; field observations.

5.4.2. Geologic and Seismic Hazards

Surface Fault Rupture

Surface fault rupture is the offset or rupturing of the ground surface by relative displacement across a fault during an earthquake. Evaluation of the potential hazard of surface fault rupture is based on the concepts of recency and recurrence of faulting along existing faults. In general, the more recent the faulting, the higher the probability for future faulting (Allen, 1975). Faults of known historic activity during the last 200 years, as a class, have a higher probability for future activity than faults classified as Holocene age (last 11,000 years) and a much higher probability of future activity than faults classified as Quaternary age (last 1.6 million years). However, it should be kept in mind that certain faults have recurrent activity measured in tens or hundreds of years whereas other faults may be inactive for thousands of years before being reactivated. The magnitude, sense, and nature of fault rupture also vary for different faults or even along different strands of the same fault. Even so, future faulting generally is expected to recur along pre-existing faults (Bonilla, 1970). The development of a new fault or reactivation of a long-inactive fault is relatively uncommon and generally is not a consideration in project development.

There is a probability for surface fault rupture to occur across the proposed Project segments along the more recent, historically active faults, particularly the active San Andreas fault zone, Garlock fault zone and San Fernando fault zone. The segment of the San Andreas fault that ruptured during the 1857 Fort Tejon earthquake is located in the Project study area. Ground surface offset as much as 30 feet was reported across the fault due to that earthquake. Other active and potentially active faults in the Project study area may also have potential for surface rupture due to seismic activity. During an earthquake on these active or potentially active faults within the Project area, potential surface rupture of the fault may result in relative displacement of the ground across the fault surface.

Some proposed segments of the BRRTP are located within a State of California Earthquake Fault Zone for the potential for ground surface rupture due to active faults. Earthquake Fault Zones within the proposed Project area are related to active faults that include the San Andreas fault zone crossed by segments D, G, H and I; the Garlock (West) fault zone crossed by Segment A near Barren Ridge; and splays of the San Fernando fault zone under Segment K located in the San Fernando Valley. The proposed Haskell Canyon and expanded Barren Ridge switching stations are not located in an Earthquake Fault Zone. Earthquake Fault Zones within the Project study area are shown on Figure 5.

A summary of Earthquake Fault Zones is presented in Table 5, and is provided for the corridor segments on a 1/10th mile basis on the Impact Assessment Table in Appendix A.

TABLE 5 – SUMMARY OF EARTHQUAKE FAULT ZONES

SEGMENT	EARTHQUAKE FAULT ZONES[1]
A	Garlock Earthquake Fault Zone from milepost 0.6 to 2.0.
B	None
C	None
D	San Andreas Earthquake Fault Zone from milepost 20.2-21.7
E	None
F	None
115th	None
G	San Andreas Earthquake Fault Zone from milepost 5.3 to 6.2.
2a	None
H	San Andreas Earthquake Fault Zone from milepost 3.8 to 4.6.
I	San Andreas Earthquake Fault Zone from milepost 7.6 to 9.1.
J	None
K	San Fernando Earthquake Fault Zones from milepost 11.0 to 11.7 and from milepost 13.7 to 15.4.

Notes:
[1] Hart and Bryant, 1997 (formerly Alquist-Priolo Special Studies Zones).

Seismic Ground Shaking

Seismic ground shaking is the response of the surface to the passing of earthquake wave fronts radiating from the focus of the earthquake. The period of shaking corresponds with the passage of the seismic wave through the site. Earthquake events from one of the regional active or potentially active faults within or near the study area could result in strong ground shaking which could affect the Project study area. The level of ground shaking at a given location depends on many factors, including the size and type of earthquake, distance from the earthquake, and subsurface geologic conditions. Disregarding local variations in ground conditions, the intensity of shaking at different locations within the study area can generally be expected to decrease with distance away from an earthquake source. The size and type of construction also affects how particular structures perform during ground shaking.

In order to evaluate the level of ground shaking that might be anticipated along the proposed Project segments due to the extent of the area, estimated peak horizontal ground acceleration (PGA) data available from the USGS was reviewed (USGS, 2002). These data indicate that the Project study area is located in an area where PGA ranging from 0.25g to 0.80g (25 to 80 percent of the acceleration due to gravity) would be anticipated during an earthquake. Higher ground acceleration levels are attributable to higher levels of ground shaking. Estimated PGA contours in the study area are presented on Figure 6. A summary of potential ground shaking levels for each segment is presented in Table 6, and is provided for the corridor segments on a 1/10th mile basis in the Impact Assessment Table in Appendix A.

In order to evaluate the level of ground shaking that might be anticipated at the proposed new Haskell Canyon Switching Station and expanded Barren Ridge Switching Station, site-specific analysis was performed. The 2007 California Building Code (CBC) recommends that the design of structures be based on the horizontal PGA having a 2 percent probability of exceedance in 50 years which is defined as the Maximum Considered Earthquake (MCE). The statistical return period for PGA_{MCE} is roughly 2,475 years. The probabilistic PGA_{MCE} for the switching stations was calculated as a percentage of gravity's acceleration using the USGS ground motion calculator (USGS, 2008). Using the USGS ground motion calculator, the design PGA for the proposed Haskell Canyon Switching Station was 0.40g and the design PGA for the expanded Barren Ridge station was 0.52g. The potential ground shaking levels for the switching stations are also presented in Table 6. The estimates of ground motion do not include near-source factors that may be applicable to the design of structures on site. The requirements of the governing jurisdictions and the 2007 CBC should be considered in Project design.

TABLE 6 – SUMMARY OF GROUND SHAKING POTENTIAL

SEGMENT	APPROXIMATE GROUND SHAKING POTENTIAL[1], (% OF THE ACCELERATION DUE TO GRAVITY)
A	0.30 g
B	0.25 – 0.40 g
C	0.30 g
D	0.30 – 0.60 g
E	0.30 – 0.40 g
F	0.40 – 0.60 g
115th	0.40 – 0.60 g
G	0.40 – 0.80 g
2a	0.60 – 0.80 g
H	0.40 – 0.60 g
I	0.40 – 0.80 g
J	0.40 g
K	0.40 – 0.80 g

Notes:

[1] USGS (2002rev) data; and USGS (2008) Ground Motion Calculator (for switching stations).

Liquefaction

Liquefaction is a phenomenon in which soil loses its shear strength for short periods during an earthquake. Ground shaking of sufficient duration can result in the loss of grain-to-grain contact, due to a rapid increase in pore water pressure, causing the soil to behave as a fluid for short periods. To be susceptible to liquefaction, a soil is typically cohesionless, with a grain size distribution of a specified range (generally sand and silt), loose to medium dense, below the groundwater table, and subjected to a sufficient magnitude and duration of ground shaking.

The State of California Seismic Hazards Mapping Program produces maps identifying potential liquefaction hazard zones, and has produced these maps for some quadrangles within the Project study area Many quadrangles within the study area have not been mapped by the State. Potential liquefaction hazard zones underlying proposed route segments in the study area that have been mapped by the State are shown on Figure 7. The label "edge of data" on Figure 7 delineates the boundary between the quadrangles that have available data and those that do not. A summary of potential liquefaction zones is presented in Table 7, and is presented on a 1/10th mile basis in the Impact Assessment Table in Appendix A.

Review of the state maps and data indicate that portions of some segments of the Project are underlain by potential liquefaction zones. These areas are located in the southern part of the Project area and include stream, valley and canyon bottoms, typically where liquefaction-prone conditions are present (loose granular soils and shallow groundwater). Areas with potential liquefaction zones include the low-lying canyons and valleys in the ANF, southern Antelope Valley, Leona Valley, the city of Santa Clarita and the San Fernando Valley. Consequently, these mapped areas and other areas with similar geologic conditions in the study area have the potential for liquefaction to occur. The potential hazard of liquefaction is not a consideration for portions of the Project study area underlain by shallow bedrock, which is typical of the mountainous ANF and Sierra Pelona areas. The proposed Haskell Canyon and expanded Barren Ridge switching stations are not located in a liquefaction hazard zone.

TABLE 7 – SUMMARY OF LIQUEFACTION HAZARD ZONES

SEGMENT	LENGTH OF SEGMENT (MILES)	MILES OF STATE LIQUEFACTION HAZARD ZONES TRAVERSED1
A	13.2	None
B	26.5	None
C	21.7	None
D	48.2	1.2
E	11.3	None
F	3.6	None
115th	4.8	0.7
G	21.2	1.9
2a	6.6	None
H	19.8	2.2
I	31.9	10.4
J	12.0	1.1
K	15.4	8.1

Notes:

[1] Data from CGS Seismic Hazards Mapping Program. Data not available for some quadrangles in the Project study area.

Landslides

Landslides typically occur in areas of steep slopes where underlying earth materials are relatively weak and particularly where high rainfall occurs and/or high groundwater levels are present. Landslides can consist of rockfalls, shallow slumps, mudflows and erosional failures, or deeper-seated rotational and block failures. Shallow failures are typically caused by high incident rainfall or concentrated surface runoff conditions that weaken surficial materials. Rotational slides, block-type slides and rockfalls form deeper within the ground, typically within rock formations, and are generally related to discontinuities in the rock that manifest into a sliding surface. Rainfall and other water infiltration into the ground can exacerbate and trigger these deeper sliding conditions. Ground shaking due to earthquakes can cause landslides to develop, trigger incipient landslides or reactivate ancient landslides.

Geologic maps produced by Thomas W. Dibblee that are available for quadrangles in the mountainous southern portion of the Project study area were reviewed for mapped landslides located within the study corridors. In addition, landslide maps contained in the State of California Seismic Hazards Reports were reviewed for mapped landslides located within the study corridors. Based on review of these referenced geologic maps of the Project study area, some existing landslides are mapped within the 500-foot-wide study corridors for the proposed segments. The State of California Seismic Hazards Mapping Program produces maps identifying potential earthquake-induced landslide hazard zones, and has produced these maps for some quadrangles within the Project study area. Many quadrangles within the study area have not been mapped by the State.

Areas of mapped landslides and earthquake-induced landslide hazard zones are predominantly located in the southern part of the Project area in the mountainous areas of the ANF and Sierra Pelona. Landslides are more likely to occur in these areas where steep slopes are present. Consequently, these mapped areas and other areas with similar steep slope conditions in the study area have potential for landslides and earthquake-induced landslides to occur. The potential for landslides and earthquake-induced landslides is not a consideration for portions of the study area with gentle to moderate topographic gradients, including much of the Antelope Valley, Mojave Desert and low-lying valley areas.

Mapped landslides are shown on the Mapped Landslide Inventory map, Figure 8. Potential earthquake-induced landslide hazard zones underlying proposed route segments in the study area that have been mapped by the State are shown on Figure 9. The label "edge of data" on Figure 9 delineates the boundary between the quadrangles that have available data and those that do not. A summary of mapped landslides and earthquake-induced landslide hazard zones traversed by each segment is presented in Table 8, and is presented on a 1/10th mile basis in the Impact Assessment Table in Appendix A. Landslides are mapped and were observed in the vicinity of the proposed Haskell Canyon Switching Station. The Barren Ridge Switching Station is located on relatively level ground on the Mojave Desert floor, and landslides are not present. The switching station sites are not located in an earthquake-induced landslide hazard zone.

TABLE 8 – SUMMARY OF MAPPED LANDSLIDES AND EARTHQUAKE-INDUCED LANDSLIDE HAZARD ZONES

SEGMENT	LENGTH OF SEGMENT (MILES)	MAPPED LANDSLIDES TRAVERSED (MILES)[1]	POTENTIAL EARTHQUAKE-INDUCED LANDSLIDE HAZARD ZONES TRAVERSED (MILES)[2]
A	13.2	None	None
B	26.5	None	None
C	21.7	None	None
D	48.2	6.6	5.6
E	11.3	None	None
F	3.6	None	None
115th	4.8	None	0.1
G	21.2	0.2	2.6
2a	6.6	None	0.6
H	19.8	2.0	4.8
I	31.9	4.1	18.8
J	12.0	5.5	7.0
K	15.4	2.7	9.3

Notes:

[1] Data from Geologic Maps by Dibblee; and from CGS Seismic Hazards Zones Reports. Data not available for some quadrangles in the Project study area.

[2] Data from CGS Seismic Hazards Mapping Program. Data not available for some quadrangles in the Project study area.

Soil Erosion

Erosion refers to the process by which soil or earth material is loosened or dissolved and removed from its original location. Erosion can occur by varying processes and may occur in the Project area where bare soil (or rock) is exposed to wind or moving water (both rainfall and surface runoff). The processes of erosion are generally a function of material type, terrain steepness, rainfall or irrigation levels, surface drainage conditions, and general land uses. Review of geologic maps and soil data indicate that surface soils along the proposed segments are comprised of variable types of materials. In addition, the proposed segments follow varied topographic terrain ranging from gentle to steep gradients. In a general sense, steeper slope gradients provide a higher erosion potential, for similar soil types. Potential erosion of surface soils is exacerbated when saturated by rain or heavy irrigation.

Many surface soils along the proposed route segments are primarily comprised of sands with variable amounts of gravel, and some fine-grained silt and clay soils. Sandy soils typically have low cohesion, and have a relatively higher potential for erosion from surface runoff when exposed in cut slopes or utilized near the face of fill embankments. These types of sandy soils are present in much of the alluvial areas in the Antelope Valley/Mojave Desert area, and in many low-lying drainage areas of other parts of the Project. Surface soils with higher amounts of clay tend to be less erodible as the clay acts as a binder to hold the soil particles together. Hard rock formations, such as in the mountainous areas of the Project, tend to be less erodible due to the lithified nature of rock.

In order to evaluate the erosion potential of the soils underlying the Project alignments, data from the NRCS was evaluated. The data pertain to the potential hazard of erosion to "off-road" and "off-trail" areas along the proposed Project segments from ground disturbance due to Project construction. The erosion hazard ratings apply to the potential for sheet or rill erosion in areas where 50 to 75 percent of the areas have been exposed by ground disturbance, such as grading for access roads and tower sites. Potential areas of erosion for the Project have been categorized as slight, moderate, severe and very severe (USDA, 2008d), and are shown on Figure 10. A summary of the erosion potential of surface soils along the proposed corridor segments is presented in Table 9, and is presented on a 1/10th mile basis in the Impact Assessment Table in Appendix A.

The soil erosion potential at the proposed Haskell Canyon Switching Station has been categorized as severe. The soil erosion potential at the expanded Barren Ridge has been categorized as slight.

TABLE 9 – SUMMARY OF EROSION POTENTIAL AREAS TRAVERSED BY EACH SEGMENT[1]

SEGMENT	LENGTH OF SEGMENT (MILES)	SLIGHT EROSION POTENTIAL (MILES)	MODERATE EROSION POTENTIAL (MILES)	SEVERE TO VERY SEVERE EROSION POTENTIAL (MILES)
A	13.2	13.2	0.0	0.0
B	26.5	25.9	0.0	0.6
C	21.7	21.5	0.2	0.0
D	48.2	17.5	4.7	26.0
E	11.3	10.8	0.5	0.0
F	3.6	3.6	0.0	0.0
115th	4.8	2.9	0.2	1.7
G	21.2	4.6	1.9	14.7
2a	6.6	0.0	0.7	5.8
H	19.8	2.2	1.6	16.0
I	31.9	5.3	7.0	19.6
J	12.0	0.3	0.4	11.6
K	15.4	0.9	0.4	8.8

Notes:

[1]Data from USDA(2008d); Data for some portions of Segment K is not available.

Subsidence

Subsidence is characterized as a sinking of the ground surface relative to surrounding areas, and can generally occur where deep alluvial soil deposits are present in valley areas such as the Antelope Valley, the city of Santa Clarita and the San Fernando Valley. Subsidence in alluvial valley areas is typically associated with groundwater withdrawal or other fluid withdrawal from the ground such as oil and natural gas. These geologic components can cause subsidence, which can result in the development of ground cracks, which could cause damage to the proposed transmission lines, including foundations, structures, pavements, and other hardscape features. Historical subsidence may have occurred in some of the valleys of the Project study area; however, the background review did not indicate that subsidence has been recently reported. No subsidence-induced ground cracks were observed crossing the proposed Project segments or switching station sites. Damage to existing transmission lines in these areas was not reported.

Soil Settlement

Loose natural soils or undocumented/poorly compacted fill may be present in some areas at the site. Much of the study area is mantled by young alluvial soils, which are generally poorly consolidated, reflecting a history without substantial loading. The older alluvial deposits present in the study area are generally relatively dense or weakly cemented and are typically less compressible than the young alluvial soils. However, older alluvial deposits may include potentially collapsible layers above the groundwater table. Collapsible soils are distinguished by their potential to undergo a significant decrease in volume upon an increase in moisture content, even without an increase in external loads.

Portions of the Project study area contain existing fill soils associated with roadway construction, property and structure development, utilities, and other factors. The degree of compaction, material types, and underlying ground conditions of existing fill soils in the study area is unknown. Undocumented or poorly compacted fill may be present in these areas. In addition, the proposed route segments transition between highly variable materials ranging from loose soils to hard rock, and the potential for differential ground movement can exist at these transitions.

Detailed references regarding the potential for settlement/collapse of soils in the Project study area are not available. The potential for soils prone to settlement or collapse would be evaluated on a site-specific basis during the design phase of the Project.

Expansive Soils

Expansive soils may be present in geologic units that underlie the proposed Project segments. Expansive soils are characterized by their ability to undergo significant volume change (shrink or swell) due to variations in moisture content. Earth materials susceptible to these volumetric changes include soils and rock formations containing clays. Changes in soil moisture content can result from rainfall, irrigation, pipeline leakage, surface drainage conditions, perched groundwater, drought, or other factors. Volumetric change of expansive soil may cause excessive cracking and heaving of structures with shallow foundations, concrete slabs-on-grade, or pavements supported on these materials.

Due to the extent of the proposed Project segments, and lack of site-specific geologic references regarding the presence of expansive soils in the Project study area, USDA soil data from the NRCS was utilized to evaluate the presence of expansive soils. The NRCS data are limited to some soils that are present along the proposed Project segments, and expansive soils may be present in other areas of the Project not indicated by the NRCS data.

Linear extensibility percent is the method used by the NRCS to evaluate the shrink-swell potential of soils, and refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. The volume change is reported as percent change for the whole soil. The shrink-swell (expansion) potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent (USDA, 2007a). If the linear extensibility is more than 3 percent, shrinking and swelling can cause damage to buildings, roads, and other structures.

The linear extensibility data in the Project study area are limited to a few soil types. A summary of the expansive potential of surface soils along the proposed corridor segments, where available from the NRCS data, is presented in Table 10, and is presented on a 1/10th mile basis in the USDA Soil Table in Appendix B. NRCS data regarding the expansive potential of surface soils at the proposed Haskell Canyon Switching Station have not been reported. However, based on the nature of the earth units mapped at the site and observed during the reconnaissance (clay shale and sandstone units), moderately to highly expansive soils may be present at this site. USDA data regarding the expansive potential of surface soils at the expanded Barren Ridge Switching Station have not been reported. However, based on the sandy nature of the surface soils mapped at the site and observed during field reconnaissance, the expansive potential of the soils at this site is considered low.

TABLE 10 – SUMMARY OF EXPANSIVE SOIL POTENTIAL AREAS TRAVERSED BY EACH SEGMENT[1]

SEGMENT/MILEPOST RANGE	SOIL DESCRIPTION	LINEAR EXTENSIBILITY PERCENT	EXPANSION POTENTIAL
D (34.7 -36.5)	Vertic Xerochrepts	7.5	High
K (14.3 – 14.6, 15.3 – 15.4)	Cropley-Urban land complex	7.5	High

Notes:

[1] Data from USDA(2007b, and 2008a, b, c and d).

Corrosive Soils

The Project study area is located in a geologic environment that could potentially contain soil conditions that are corrosive to concrete and buried metal structures. Corrosive soil conditions may exacerbate the corrosion hazard to concrete foundations, metal pipes and other buried concrete or metal improvements that are planned for the Project. Corrosivity of soils is generally a function of soil resistivity, presence of chlorides or sulfates, oxygen content, and pH. Typically, soil with low pH and high chloride/sulfate concentrations are more corrosive. High sulfate content soils are corrosive to concrete, and may limit concrete curing (and reduce its strength) or deteriorate concrete. Low pH and/or low resistivity soils could corrode buried metal structures.

In order to evaluate the erosion potential of the soils underlying the Project extents, data from the NRCS were evaluated. The NRCS data are available for only some of the soils traversed by the proposed Project, and some soils do not have reported information regarding their corrosive potential. Detailed assessment of the potential for corrosive soils in the Project study area would be evaluated on a site-specific basis during the design phase of the Project.

A summary of the corrosive potential of surface soils along the proposed corridor segments is presented in Table 11, and is presented on a 1/10th mile basis in the Impact Assessment Table in Appendix A. USDA data regarding the corrosive potential of surface soils at the proposed Haskell Canyon Switching Station have not been reported. The corrosive soil potential at the expanded Barren Ridge Switching Station has been categorized as low for concrete and moderate for steel.

TABLE 11 – SUMMARY OF CORROSIVE SOIL POTENTIAL AREAS TRAVERSED BY EACH SEGMENT[1]

SEGMENT	LENGTH OF SEGMENT (MILES)	AREAS WITH AVAILABLE DATA (MILES)	LOW CORROSIVE POTENTIAL (MILES)	MODERATE CORROSIVE POTENTIAL (MILES)	HIGH CORROSIVE POTENTIAL (MILES)
A	13.2	13.2	0.0	9.5	3.7
B	26.5	26.2	2.9	9.9	13.4
C	21.7	21.7	2.4	13.2	6.1
D	48.2	30.2	15.1	6.6	8.5
E	11.3	11.3	3.4	1.5	6.4
F	3.6	2.8	1.5	1.3	0.0
115th	4.8	4.7	1.8	2.8	0.0
G	21.2	6.5	2.6	3.6	0.3
2a	6.6	0.7	0.0	0.7	0.0
H	19.8	5.3	1.6	3.2	0.5
I	31.9	28.9	8.4	15.4	5.1
J	12.0	8.6	1.3	0.3	7.0
K	15.4	9.7	4.7	3.2	1.8

Notes:

[1] Data from USDA(2007b, and 2008a, b, c and d). When multiple soils occur in a single 1/10th mile, the higher potential corrosive value is considered.

Groundwater

Based on review of groundwater contour maps published in the CGS Seismic Hazard Evaluation reports, and available well data from the CDWR, groundwater is present underlying the proposed elements of the Project (CDWR, 2008). The historic high groundwater depths along the proposed segments of the Project are variable. In general, reported groundwater depths from available data in much of the Antelope Valley/Mojave Desert area are relatively deep and range from 138 to 336 feet below the ground surface. Some relatively shallow groundwater levels have been reported along the southern edge of the Antelope Valley and San Andreas Fault Rift Zone underlying Segments F, G and I. The data indicate that relatively shallow groundwater less than 50 feet deep is present in low-lying valley and other drainage areas in the southern portions of the Project study area. Segments D, G, I, J and K in this part of the Project study area are reportedly underlain by shallow groundwater. Data regarding groundwater levels at the proposed Haskell Canyon and expanded Barren Ridge switching stations are not available.

Data regarding areas of perched groundwater and perched groundwater depths are not readily available for the Project study area. Shallow perched groundwater can occur at variable locations due to seasonal variations, variations in ground surface topography, precipitation, irrigation practices, soil/rock types, groundwater pumping, and other factors, and may underlie the proposed Project segments.

A summary of approximate groundwater levels for the Project segments is presented in Table 12, and is listed for the corridor segments on a 1/10th mile basis in Appendix A.

TABLE 12 – SUMMARY OF GROUNDWATER LEVELS BY SEGMENT[1]

SEGMENT	RANGE OF APPROXIMATE GROUNDWATER DEPTHS FROM AVAILABLE DATA (FEET)
A	No data available
B	172 to 295
C	138
D	203 to 336 (Antelope Valley portion of segment) 10(milepost 34.8 to 35.0)
E	204 to 224
F	Less than 10 to 233
115th	167
G	Less than 10 to 184
2a	No data available.
H	No data available.
I	Less than 10 to 326
J	10
K	10 to 40

Notes:

[1] CDWR (2008); CGS Seismic Hazards Evaluation Reports.

Inundation from Dam Failure, Seiche or Tsunami

Based on review of the Safety Element chapters of the Los Angeles County (Los Angeles County, 1990) and Kern County General Plans (Kern County, 2007), portions of the Project study area could be affected by potential dam failures that could inundate the proposed Project corridors. The Los Angeles County General Plan indicates that areas susceptible to inundation from dam failure are present in the study area in the following locations in Los Angeles County:

- Bouquet Canyon and San Francisquito Canyon due to potential failure of the Bouquet Reservoir, which Segments D, G, H, J and K traverse.
- The south side of the Castaic Lake dam where Segments D and J traverse the inundation zone.
- The Antelope Acres area west of Lancaster due to potential failure of the Fairmont Reservoir, which Segments G and F traverse.
- The San Fernando area due to potential failure of the Van Norman reservoir at the south end of Segment K.

The General Plan for Kern County did not indicate areas of inundation from potential dam failure within the Kern County portion of the study area. The proposed Haskell Canyon and expanded Barren Ridge switching stations are not located in a dam failure inundation zone. A summary of potential dam inundation areas along the proposed corridor segments is presented in Table 13, and is presented on a 1/10th mile basis in the Impact Assessment Table in Appendix A.

TABLE 13 – SUMMARY OF DAM FAILURE INUNDATION AREAS

SEGMENT	LENGTH OF SEGMENT (MILES)	POTENTIAL DAM INUNDATION AREAS TRAVERSED (MILES)[1]
A	13.2	None
B	26.5	None
C	21.7	None
D	48.2	1.5
E	11.3	None
F	3.6	0.9
115th	4.8	None
G	21.2	1.4
2a	6.6	
H	19.8	0.3
I	31.9	0.8
J	12.0	1.5
K	15.4	1.0

Notes:

[1] Data from County of Los Angeles, 1990, Kern County, 2005; Kern County, 2007.

A seiche is the seismically induced sloshing of water in a large enclosed basin, such as a lake, reservoir, or bay. Bouquet Reservoir is in close proximity to Segment H, and Castaic Lake is in close proximity to Segments D and J in the Project area. The General Plans reviewed did not indicate the potential for inundation due to seiche from these water bodies.

Tsunamis are open-sea tidal waves generated by earthquakes. Tsunami damage is typically confined to low-lying coastal areas. Water surge caused by tsunamis is measured by distance of run-up on the shore. Due to the distance of the Project area from the Pacific coast, tsunamis would not affect the Project.

6.0 IMPACT ASSESSMENT - SEGMENTS

6.1 METHODOLOGY

This preliminary geotechnical evaluation for the proposed BRRTP has included review of soil, geologic and seismic background information, field reconnaissance, and assessment of potential impacts and mitigation recommendations to provide findings regarding the proposed corridors within the Project area. The proposed segments within the Project area were evaluated in regards to potential impacts to geologic resources and potential geologic and seismic hazards associated with implementation of the Project.

Geologic resources that may be affected by construction of the BRRTP include surficial soils that may be subject to erosion, and distinctive geologic features. Potential geologic hazards affecting the proposed Project include landslides or mudflows, soil erosion, subsidence, soil settlement, expansive soils, corrosive soils, groundwater, and inundation from dam failure or seiche. Potential seismic hazards that may affect the proposed BRRTP are surface fault rupture from active faults that cross the proposed corridors; high levels of ground shaking, liquefaction, and earthquake-induced landslides.

The assessment of potential impacts was performed by a study of the proposed segments relative to known geologic conditions, features and potential hazards. The segments were plotted on geologic maps, fault maps, Seismic Hazards maps, Earthquake Fault Zones maps and other geologic references to evaluate the potential for impacts. GIS data were utilized for evaluation of soils, geologic units, fault locations, Earthquake Fault Zone locations, anticipated ground shaking levels, liquefaction and earthquake-induced landslide zones (for some parts of the study area), potential soil erosion areas, expansive soils, and corrosive soils.

The potential impacts were evaluated using a 500-foot-wide "impact corridor." Geologic resources and potential hazards within the impact corridor were analyzed. An Impact Assessment Table was created to evaluate the proposed segments on a 1/10th mile basis to develop an assessment of initial impacts. Recommendations for mitigation have been developed for Project impacts and are presented in Section 6.5. Residual Project impacts based on implementation of mitigation recommendations are discussed in Section 7, and are also presented on the Impact Assessment Table included in Appendix A.

6.2 GEOLOGIC RESOURCE SENSITIVITY

The proposed Project has been evaluated with respect to its potential impacts on the geologic environment. Geologic resources that may be affected by construction of the BRRTP include surficial soils that may be subject to erosion, and distinctive geologic features. Assessment of the potential Project impacts on these features is based on the review of readily available USDA soil data and published geotechnical literature pertinent to the proposed Project, and limited field reconnaissance.

The following definitions have been provided regarding sensitivity criteria used for evaluation of geologic resources. Sensitivity is defined as a measure of probable adverse response of a resource to direct and indirect impacts associated with the construction, operation, and maintenance of Project components. Sensitivity levels for potential impacts to geologic resources are categorized as exclusion, high, moderate, or low, based upon the following general characteristics:

Exclusion: Areas where the siting of Project improvements is essentially precluded. This category includes areas where there would be unacceptable geologic impacts due to the construction or operation of a transmission line or switching station.

High Avoidance: Areas have high sensitivity due to substantial geologic impacts due to construction and operation of a transmission line or switching station. For the purposes of this study, areas designated as high sensitivity are considered least desirable and should be avoided, if possible, or mitigation implemented to reduce the adverse impacts.

Moderate Avoidance: Areas have moderate sensitivity due to limited geologic impacts due to construction and operation of a transmission line or switching station. For the purposes of this study, areas designated as moderate sensitivity are not considered highly desirable, but may be used with mitigation of adverse impacts.

Low Avoidance or Opportunities: Areas have low sensitivity where there are no or slight geologic impacts due to construction and operation of a transmission line or switching station. For the purposes of this study, areas designated as low sensitivity are more desirable for the siting of Project components.

TABLE 14 – SENSITIVITY RATINGS FOR GEOLOGIC RESOURCES

RESOURCE COMPONENT	SENSITIVITY RATING				RATIONALE
	EXCLUSION	HIGH	MODERATE	LOW	
Soils with Very Severe to Severe Erosion Potential		X			High potential for significant impacts from soil loss due to erosion.
Soils with Moderate Erosion Potential			X		Moderate potential for significant impacts from soil loss due to erosion.
Soils with Slight Erosion Potential				X	Low potential for significant impacts from soil loss due to erosion.
Geologic Unit Contains Distinctive Geologic Features (Prominent or Unique Outcrops, Scenic Formations, San Andreas Fault Zone, White Tuff Beds)		X			High potential for impacts to distinctive geologic features.
Geologic Unit May Contain Distinctive Geologic Features (Significant Marker Beds, Scenic Formations)			X		Moderate potential for impacts to distinctive geologic features.
Geologic Unit (Alluvium or soil-covered areas) Does Not Contain Distinctive Geologic Features				X	Low potential for impacts to distinctive geologic features.

Notes: Sensitivity criteria provided by Power Engineers.

6.3 POTENTIAL GEOLOGIC AND SEISMIC HAZARDS

The impacts of potential geologic and seismic hazards that may affect the proposed BRRTP have been evaluated. Assessment of these potential impacts is based on geologic and seismic review of readily available published geotechnical literature and data pertinent to the proposed Project, and limited field reconnaissance.

Potential seismic hazards that may affect the proposed BRRTP involve surface fault rupture from active faults that cross the proposed corridors; high levels of ground shaking, liquefaction, and earthquake-induced landslides. Potential geologic hazards that may affect the proposed Project include landslides or mudflows, erosion, subsidence, soil settlement, expansive soils, corrosive soils, groundwater, and inundation from dam failure or seiche.

6.4 IMPACT LEVELS

Table 15 presents the impact potential, as defined by CEQA, associated with each of the geologic conditions discussed in the following sections, and the corresponding impact level utilized in this study for impact assessment. According to Appendix G of the CEQA guidelines (CERES, 2005b), a project is considered to have a geologic impact if its implementation would result in or expose people/structures to potential substantial adverse effects, including the risk of loss, injury, or death related to hazards expressing one or more of the geologic conditions presented in this evaluation.

TABLE 15 – IMPACT LEVELS

IMPACT LEVEL	IMPACT POTENTIAL[1]
High	Potentially significant impact.
Moderate	Less than significant with mitigation incorporation.
Low	Less than significant impact.
No	No impact.

Note:

[1] Reference: CERES, 2005b, Appendix G, Environmental Checklist Form, Final Text, dated October 26

6.5 MITIGATION RECOMMENDATIONS

The potential geologic and seismic impacts that may affect the BRRTP may be mitigated by employing sound engineering practice in the planning, design and construction of the new improvements proposed for the Project. This practice includes performance of the following general and specific techniques discussed below prior to the design and construction of the BRRTP.

6.5.1. Soil Loss/Soil Erosion

Construction for the proposed Project is anticipated to create the potential for soil erosion during excavation, grading, and trenching activities for access roads, tower sites, pulling and tensioning sites and the construction of switching stations. However, with the implementation of prudent site practices during construction, water- and wind-related soil erosion can be limited and managed within construction site boundaries. Examples of these procedures would include surface drainage measures for erosion due to water, such as the use of erosion prevention mats or geofabrics, silt fencing, sandbags and plastic sheeting, and temporary drainage devices. Positive surface drainage should be accommodated at Project construction sites to allow surface runoff to flow away from site improvements, slope faces or areas susceptible to erosion. To mitigate wind-related erosion, wetting of soil surfaces and/or covering exposed ground areas and soil stockpiles could be considered during construction operations, as appropriate. The use of tackifiers may be considered to reduce the potential for water- and wind-related soil erosion.

Where deemed appropriate for areas of significant concern, limited access areas, or areas of very steep terrain, other practices could be considered to mitigate erosion. These practices may include avoiding these areas, or utilizing construction practices to reduce impacts. Helicopter-access could be utilized where warranted during construction in these areas to reduce ground disturbance by eliminating the need for access road construction. Using specialty foundations systems for towers, such as micropiles or hand-excavated foundations, could be considered to reduce the ground impact related to foundation construction. The need for these practices would be considered during the design phase of the Project based on Project improvement site locations. As needed, a Storm Water Pollution Prevention Plan (SWPPP) could be developed for construction sites that would include the use of Best Management Practices (BMPs). The SWPPP would also include specific statements about the required effectiveness of the BMPs, as well as plans for routine inspection and maintenance to ensure that the BMPs continue to function effectively.

During long-term operation of the transmission line improvements, soil erosion can be mitigated through prudent site design and maintenance practices. Design procedures can be performed to reduce soil erosion such as appropriate surface drainage design of roadways and tower pad areas to provide for positive surface runoff. Design would address reducing concentrated run-off conditions that could cause erosion rilling and affect the stability of Project improvements. The use of erosion control fabrics and roadway drainage devices can be designed and maintained to reduce erosion processes.

6.5.2. Distinctive Geologic Features

Distinctive geologic features are present in the Project study area, and the potential impacts to these features would be specifically evaluated during Project design. During the design phase, preliminary Project plans would be reviewed and the locations of proposed access roads, tower sites and pulling and tensioning sites would be field checked for impacts to distinctive geologic features.

Prominent rock features are, by nature, typically harder than the surrounding materials. They are, therefore, more difficult to excavate and present more difficulty in grading of roads, tower sites and pulling and tensioning sites. Project designers and contractors may prefer to avoid these features for ease of construction and in efforts to reduce Project costs. Measures to mitigate the impacts to distinctive geologic features include avoiding the features. Design considerations would include siting of towers, roads and pulling and tensioning sites away from the geologic feature. Design plans and site grading could be achieved to facilitate the highly sensitive landforms and surrounding gradients in efforts to reduce Project costs and thus avoid more highly distinctive geologic features.

6.5.3. Surface Rupture

To assess the potential fault-rupture hazard for the proposed Project components related to active faults, evaluation may include review of geologic maps showing the locations of active faults relative to Project improvements. Where appropriate in close proximity to active faults, surface reconnaissance to map the locations of active faults and/or subsurface evaluation may be performed. Evaluation of potential fault-rupture hazard to Project improvements would be performed prior to design and construction so that, in the event a fault-rupture hazard exists, mitigation techniques can be implemented. Recommendations for mitigation of potential fault rupture hazard would typically include locating transmission system improvements away from the trace of an active fault, designing the conductor system for an acceptable amount of movement, or implementing systems to maintain safety and allow for displacement that could be repaired to make the system operational.

Surface reconnaissance to evaluate potential surface fault rupture may include checking of geologic maps and visual observation of the earth units and geomorphology in order to locate active faults relative to the alignment. Ground features that may indicate the location of active faults may be concealed by natural soils, fill soils or manmade improvements, and surface reconnaissance may not be adequate to locate active faults with potential for surface rupture. Consequently, subsurface exploration may be appropriate to evaluate fault locations and conditions. Subsurface evaluation might include the excavation and detailed logging of exploratory trenches and/or borings, geophysical studies such as high resolution seismic reflection, seismic refraction, ground penetrating radar, gravity and/or magnetic profiling or other applicable methods.

Transmission systems throughout California cross active faults. With the prevalence of active faulting in this seismically active region, the crossing of active faults is unavoidable. In this regard, mitigation of the potential surface fault rupture hazard in some areas of the segment may not involve avoiding the fault, but would involve designing the system for the anticipated displacement to reduce the damage while providing for the safety of the public.

Mitigation for potential fault-rupture hazard could include various techniques. Foundations for towers or other structures can be located away from the fault trace to avoid the fault. Locating improvements a sufficient distance from active faults would limit damage to the system as long as the fault ruptures along the identified surface and does not rupture along a new surface. Planning for the anticipated displacement by the use of additional slack in the conductor, or placing “dead-end” tower structures on both sides of a fault trace may reduce damage to the system and non-operational time.

6.5.4. Seismic Ground Shaking

Site-specific evaluation of the potential ground-shaking hazard for the proposed Project components would be performed prior to design and construction so that appropriate structural design and mitigation techniques can be implemented. Typically, this evaluation would involve the use of geotechnical software programs utilizing site latitudinal and longitudinal coordinates and general site geologic information to evaluate the potential levels of ground shaking at specific locations. Where deemed appropriate during Project design, site-specific geotechnical evaluations to assess the subsurface characteristics of the on-site earth materials with regard to ground shaking could be performed. Subsurface data could be obtained through exploratory excavations and laboratory testing of soils.

Mitigation of the potential impacts of seismic ground shaking can be achieved through Project design. During the design phase, site-specific geotechnical evaluations would be performed to analyze the site-specific ground motion anticipated for the transmission line improvements. Site-specific evaluation of the potential ground shaking hazard would involve evaluation to develop seismic design parameters for use by the Project structural engineer. Structural elements of the transmission line system can then be designed to resist or accommodate appropriate site-specific ground motions and to conform to the current seismic design standards.

6.5.5. Liquefaction

Liquefaction would typically be a potential hazard in parts of the Project area where liquefaction-prone conditions are present (loose granular soils and shallow groundwater) and include stream, valley and canyon bottoms within the study corridors. In these areas of the proposed Project, foundations for towers or other structures can be located to avoid potential liquefaction areas and mapped liquefaction zones, such as moving tower location upslope from a valley bottom.

To evaluate the potential liquefaction hazard for the proposed Project components in areas of potential liquefaction concern, subsurface evaluation could be performed. Site-specific evaluation of the potential liquefaction hazard would be performed prior to design and construction so that, in the event a liquefaction hazard exists, appropriate structural design and mitigation techniques can be implemented. Site-specific geotechnical evaluations to assess the liquefaction and dynamic settlement characteristics of the on-site soils would include drilling of exploratory borings, evaluation of groundwater depths, and laboratory testing of soils.

Mitigation for construction in liquefaction zones may include in-situ ground modification, removal of liquefiable layers and replacement with compacted fill, or support of Project improvements with piles at depths designed specifically for liquefaction. Pile foundations can be designed for liquefaction hazard by supporting the piles in dense soil or bedrock below the liquefiable zone or other appropriate methods as evaluated during the site-specific evaluation. Additional recommendations for mitigation of potential liquefaction may include densification by installation of stone columns, vibration, deep dynamic compaction, and/or compaction grouting.

6.5.6. Landslides

To evaluate the potential for landslides, surficial slope failures and/or mudflows to affect the proposed Project components, evaluation may include review of geologic maps showing the locations of landslides and potential earthquake-induced landslide zones relative to these Project components. Where appropriate in close proximity to potential landslide areas, surface reconnaissance to map the locations of landslides and/or subsurface evaluation could be performed. Evaluation of the landslide and surficial slope failure hazard would be performed prior to design and construction so that, in the event the hazard exists, mitigation techniques can be implemented.

Surface reconnaissance to evaluate the potential for landslides and surficial slope failures would be performed in the design phase and may include checking of geologic maps and visual observation of the conditions of slopes and site geomorphology in order to locate landslides or potential landslide areas relative to proposed tower locations and the Haskell Canyon site. Subsurface exploration may be appropriate to evaluate the potential for landslides and surficial slope failures. Subsurface evaluation might include the excavation and detailed logging of exploratory trenches, test pits and/or borings. Slope stability computer analyses may be performed to address the stability of slopes in the Project areas.

To mitigate the potential landslide hazard in some areas of the proposed Project, transmission towers can be located away from a landslide, and avoid it by spanning across, above or below the landslide feature. Access roads can be designed and constructed to avoid landslides or reduce impacts due to landslides through grading techniques. Where deemed appropriate for areas of significant concern, helicopter-based construction techniques may be implemented to avoid building access roads across landslides or landslide-prone terrain. Measures to mitigate potentially unstable slope conditions and mitigate the potential for landslides and surficial slope failures include: excavating potentially unstable material resulting in a flatter more stable slope configuration; reduction of landslide driving forces by removal of earth materials at the top of the landslide; construction of buttress and/or stabilization fills; construction of retaining walls, installation of rock bolts on the face of the slope, or installation of protective wire mesh on the slope face; and/or the construction of debris impact walls at the toe of the slope to contain rock fall debris.

6.5.7. Subsidence

The background review did not indicate that subsidence has been recently reported in the Project area. Therefore, potential subsidence is considered to have a low impact and recommendations for mitigation are not provided.

6.5.8. Soil Settlement

To evaluate the potential for settlement to affect the proposed Project components, surface reconnaissance and subsurface evaluation could be performed. During the design phase of the Project, site-specific geotechnical evaluations would be performed to assess the settlement potential of the on-site natural soils and undocumented fill. This may include detailed surface reconnaissance to evaluate site conditions, and drilling of exploratory borings and laboratory testing of soils, where warranted, to evaluate site conditions. Evaluation of the potential soil settlement hazard would be performed prior to design and construction so that, in the event the hazard exists, mitigation techniques can be implemented.

In some areas of the proposed Project, foundations for towers or other structures and roadways can be located to avoid potential areas of settlement. Examples of possible mitigation for soils with potential for settlement include removal of the compressible/collapsible soil layers and replacement with compacted fill; surcharging to induce settlement prior to construction of improvements; allowing for a settlement period after or during construction of new fills; and specialized foundation design including the use of deep foundation systems to support structures. Varieties of in-situ soil improvement techniques are also available, such as dynamic compaction (heavy tamping) or compaction grouting.

6.5.9. Expansive Soils

To evaluate the potential for expansive soils to affect the proposed Project components, subsurface evaluation including laboratory testing could be performed. Site-specific, subsurface evaluation could be conducted during the design phase of the Project to evaluate the potential extent of expansive soils along the proposed segments. Where expansive soil conditions are found to occur and are considered detrimental to proposed improvements, mitigation techniques can be implemented. Evaluation of the potential expansive soils hazard would be performed prior to design and construction so that, in the event the hazard exists, mitigation techniques can be implemented, including avoiding areas of expansive soils. To avoid site-specific subsurface evaluation, design measures to accommodate expansive soil activity can be included in the initial design for the proposed Project improvements.

Mitigation for expansive soils would typically include techniques such as overexcavation and replacement with non-expansive soil, chemical treatment (e.g., lime or cement), moisture control, and/or specific structural design for expansive soil conditions developed during design of the Project.

6.5.10. Corrosive Soils

To evaluate the potential for corrosive soils to affect the proposed Project components, subsurface evaluation including laboratory testing could be performed. Evaluation of the corrosive soil potential can be accomplished by testing and analysis of soils at foundation design depths. The laboratory tests conducted on the soils prior to construction and improvement plan preparation would include corrosivity tests to evaluate the corrosivity of the subsurface soils. Review of these data by a corrosion engineer would result in corrosion protection measures suitable to the Project elements. Evaluation of the potential corrosive soils hazard would be performed prior to design and construction so that, in the event the hazard exists, mitigation techniques can be implemented, including avoiding areas of corrosive soils. To avoid site-specific subsurface evaluation, corrosion protection measures can be included in the initial design for the proposed Project improvements.

Mitigation of corrosive soil conditions may involve the use of concrete resistant to sulfate exposure. Corrosion protection for metals may be needed for underground foundations or structures in areas where corrosive groundwater or soil could potentially cause deterioration. Typical mitigation techniques include epoxy and metallic protective coatings, the use of alternative (corrosion resistant) materials, and selection of the appropriate type of cement and water/cement ratio. Specific measures to mitigate the potential effects of corrosive soils would be developed in the design phase.

6.5.11. Groundwater

To evaluate the potential for groundwater that may affect construction of the proposed Project components, subsurface evaluation could be performed. Evaluation of the potential shallow groundwater hazard would be performed prior to design and construction so that, in the event the hazard exists, mitigation techniques can be implemented, including avoiding areas of shallow groundwater or preparation for the anticipated groundwater during construction. Site-specific geotechnical evaluations to assess the groundwater characteristics may include review of available groundwater data, drilling of exploratory borings, evaluation of groundwater depths, and possible installation of groundwater monitoring wells, where needed.

Measures to mitigate potential shallow groundwater conditions would include: shoring/casing of excavations below the groundwater table to prevent inundation of the excavated area; pumping groundwater from excavations to keep levels below a specified depth; using dewatering wells to pump groundwater out of the ground and lower the groundwater table at specified locations; and, where needed, utilizing more advanced, and costly techniques to manage groundwater, such as the use of subsurface grout curtains or soil/cement walls. Measures to mitigate the potential impacts of excavation spoils that are saturated due to groundwater would include sandbags or berms, or the use of bins or drums to contain the excavation materials and water and reduce impacts to surface soils and surface water quality. Where deemed appropriate for areas of significant concern, the use of micropile foundations for towers could be utilized to reduce construction impacts related to drilling of larger excavations for foundations, which may be prone to impacts due to shallow groundwater.

6.5.12. Inundation from Dam Failure, Seiche or Tsunami

To evaluate the potential for dam inundation or seiche to affect the proposed Project components, review of dam inundation maps and detailed hydrologic evaluation could be performed to assess the risks and potential effects of inundation to particular Project areas. Evaluation of potential dam inundation or seiche hazards at site-specific locations would be performed prior to design and construction so that, in the event of inundation, measures could be in place to mitigate the effects.

Measures to mitigate the potential inundation due to dam failure or seiche would include raising the elevation of the proposed transmission tower locations to keep them elevated above the potential inundation level. These types of inundation effects are anticipated to be temporary, and may necessitate minor maintenance in the affected segments to make the system operational.

Since the Project area is not considered susceptible to tsunami inundation, the proposed Project would not result in impacts related to tsunamis, and recommendations for mitigation are not provided.

7.0 IMPACT RESULTS

The initial impact results for each component of the Project are presented in the following sections. These Project components include: 1) construction of the new 230 kV transmission line from Barren Ridge to Haskell Canyon; 2) the new 230 kV circuit placed on existing towers from Haskell Canyon to Castaic; 3) the 230 kV reconductoring placed on existing towers from Barren Ridge to Rinaldi; 4) construction of the new Haskell Canyon Switching Station; and 5) expansion of the Barren Ridge Switching Station.

Assessment of the results for the proposed new 230 kV transmission line is presented by impact type in the following sections. Summary tables are provided in the impact type sections in order to compare the level of impact of the proposed routing segments with each other. Since the components are evaluated as segments, assessment of the impacts of the new 230 kV circuit from Haskell Canyon to Castaic (evaluated as Segment J) and the 230 kV reconductoring from Barren Ridge to Rinaldi (evaluated as Segments A, B, G and K) is also presented in Section 7.1.

7.1 NEW 230 KV TRANSMISSION LINE - SEGMENTS

The initial impact results in this section of the report are presented in order to evaluate the proposed construction of the new 230kv transmission line. A summary of the relative geologic impacts for each proposed segment of the transmission line Project is summarized below in Table 16. Detailed discussion and presentation of the individual impacts follows.

This preliminary geotechnical evaluation has considered assessment of the potential geologic resources in the affected environment that may be impacted by construction of the proposed BRRTP. Inversely, the preliminary evaluation has also considered the potential geologic and seismic hazards in the affected environment that may have impacts on development of the proposed Project. The potential geologic resources in the environment that may be impacted by the Project include highly erosion-sensitive soils and distinctive geologic features. The potential geologic and seismic hazards that may have an impact to the Project include surface fault rupture, seismic ground shaking, liquefaction, landslides, erosion, settlement, expansive soils, corrosive soils, groundwater and inundation from potential dam failure. These potential impacts may affect individual components of the Project, including transmission towers, access roads and/or the switching stations.

During the design phase when the Project components are being sited, the potential Project impacts would be evaluated through data review, geologic reconnaissance and subsurface exploration, as appropriate. The results of the site-specific evaluations would be incorporated into the design of the Project components. Through this process, the highly sensitive geologic resources that could be affected would be located and mitigation would be implemented to reduce the impacts to low levels. The potential geologic and seismic hazards would be considered relative to the construction of Project components, and mitigation techniques would be developed to reduce the impacts to low levels that would be appropriate for design. With the implementation of the appropriate mitigations, the initial impacts to geologic resources and impacts related to potential seismic and geologic hazards can be reduced to low residual levels.

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TABLE 16 – RELATIVE GEOLOGIC IMPACTS

Segment Corridor	Potential Geologic Impact											
	Soils[1]	**Distinctive Geologic Features[2]**	**Surface Fault Rupture[3]**	**Ground Shaking[4]**	**Lique-faction[5]**	**Land-slides[6]**	**Soil Erosion[7]**	**Subsidence/ Settlement[8]**	**Expansive Soils[9]**	**Corrosive Soils[10]**	**Ground-water[11]**	**Inundation from Dam Failure or Seiche[12]**
A	1	1	3	2	1	1	1	1	1	2	-	1
B	3	1	2	2	1	1	3	1	1	3	1	1
C	2	1	1	2	1	1	2	1	1	3	1	1
D	3	2	3	3	2	2	3	1	2	3	3	2
E	2	2	1	2	1	1	2	1	1	3	1	1
F	1	1	1	3	1	1	1	1	1	2	3	2
115th	3	2	1	3	2	1	3	1	1	2	1	1
G	3	2	3	3	2	2	3	1	1	3	3	2
2a	3	2	2	3	1	2	3	1	1	2	-	1
H	3	2	3	3	2	2	3	1	1	3	-	2
I	3	3	3	3	2	2	3	1	1	3	3	2
J	3	2	1	2	2	2	3	1	1	3	3	2
K	3	2	3	3	2	2	3	1	2	3	3	2

NOTES:

[1] Rating 1 = Route traverses soils with low sensitivity rating.
Rating 2 = Route traverses soils with moderate sensitivity rating.
Rating 3 = Route traverses soils with high sensitivity rating.

[2] Rating 1 = Route traverses distinctive geologic features with low sensitivity rating.
Rating 2 = Route traverses distinctive geologic features with moderate sensitivity rating.
Rating 3 = Route traverses distinctive geologic features with high sensitivity rating.

[3] Rating 1 = Route does not traverse a known active or potentially active fault.
Rating 2 = Route traverses a potentially active fault.
Rating 3 = Route traverses an active fault or is located in an Earthquake Fault Zone.

[4] Rating 1 = Route traverses areas with estimated Peak Horizontal Ground Acceleration (PGA) less than 0.3g.
Rating 2 = Route traverses areas with estimated PGA in the range of 0.3g to less than 0.6g.
Rating 3 = Route traverses areas with estimated PGA in the range of 0.6g to 0.8g.

[5] Rating 1 = Route does not traverse a Liquefaction Hazard Zone.
Rating 2 = Route traverses a Liquefaction Hazard Zone.

[6] Rating 1 = Route does not traverse an Earthquake-Induced Landslide Hazard Zone or mapped landslide.
Rating 2 = Route traverses an Earthquake-Induced Landslide Hazard Zone or mapped landslide.

[7] Rating 1 = Route traverses areas of slight erosion potential.
Rating 2 = Route traverses areas of moderate erosion potential.
Rating 3 = Route traverses areas of severe to very severe erosion potential.

[8] Rating 1 = Route traverses areas with no reported compressible/collapsible soils or subsidence.
Rating 2 = Route traverses areas of reported compressible/collapsible soils or subsidence.

[9] Rating 1 = Route traverses areas with no reported expansive soils.
Rating 2 = Route traverses areas with reported potential for expansive soils.

[10] Rating 1 = Route traverses areas of reported soils with low corrosive potential.
Rating 2 = Route traverses areas of reported soils with moderate corrosive potential.
Rating 3 = Route traverses areas of reported soils with high corrosive potential.

[11] Rating 1 = Route traverses areas of reported groundwater more than 50 feet deep.
Rating 2 = Route traverses areas of reported groundwater between 25 and 50 feet deep.
Rating 3 = Route traverses areas of reported groundwater less than 25 feet deep.

[12] Rating 1 = Route traverses areas with no reported potential for inundation from dam failure or seiche.
Rating 2 = Route traverses areas with potential for inundation from dam failure or seiche.

- Areas with no data available.

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7.1.1. Soils

This potential geologic impact refers to the proposed Project's potential to cause erosion loss of surface soils, and impacts to potentially sensitive soils. Based on NRCS soil data, soils with varying degrees of erosion potential are located along the proposed Project segments and at the switching station sites. Potential areas of erosion for the Project have been categorized as slight, moderate, severe and very severe (USDA, 2008d). These erosion potential levels correspond to low, moderate and high sensitivity ratings, respectively. If implementation of the proposed Project components would cause significant erosion and loss of high-sensitivity-rating surface soils, then erosion would have a high impact on soil resources. Significant erosion and loss of moderate-sensitivity-rating surface soils would have a moderate impact on the soil resources. Significant erosion and loss of low-sensitivity-rating surface soils would have a low impact on the soil resources.

A summary of sensitivity levels/potential initial impacts to soils is provided below in Table 17. A summary of sensitivity ratings for soils underlying the proposed Project segments is presented on a 1/10th mile basis in the USDA Soils table in Appendix B.

Future construction activities for the Project would result in ground surface disruption during excavation, grading, and trenching that would create the potential for erosion to occur and impact sensitive soils. However, the erosion potential during construction can be mitigated with prudent site management practices during construction (specified in the SWPPP). Following development of site improvements, erosion can be mitigated by long-term erosion management practices incorporated into the design and maintenance of the Project. With incorporation of mitigation techniques, future site erosion and impacts to sensitive soils can be reduced. Potential soil erosion related to the Project development is considered to have a low residual impact with mitigation incorporation.

TABLE 17 – SUMMARY OF POTENTIAL INITIAL IMPACTS TO SOILS[1]

SEGMENT	LENGTH OF SEGMENT (MILES)	LOW SENSITIVITY/LOW IMPACT LEVEL AREAS TRAVERSED (MILES)	MODERATE SENSITIVITY/ MODERATE IMPACT LEVEL AREAS TRAVERSED (MILES)	HIGH SENSITIVITY/HIGH IMPACT LEVEL AREAS TRAVERSED (MILES)
A	13.2	13.2	0.0	0.0
B	26.5	25.9	0.0	0.6
C	21.7	21.5	0.2	0.0
D	48.2	17.5	4.7	26.0
E	11.3	10.8	0.5	0.0
F	3.6	3.6	0.0	0.0
115th	4.8	2.9	0.2	1.7
G	21.2	4.6	1.9	14.7
2a	6.6	0.0	0.7	5.8
H	19.8	2.2	1.6	16.0
I	31.9	5.3	7.0	19.6
J	12.0	0.3	0.4	11.6
K	15.4	0.9	0.4	8.8

Notes:
[1] Data from USDA(2008d); Data for some portions of Segment K are not available.

7.1.2. Distinctive Geologic Features

This potential geologic impact refers to the proposed Project's potential to cover or modify distinctive, prominent geologic features with potentially high sensitivity rating, which could occur during grading or excavation activities related to Project construction. Distinctive geologic features can include unique marker beds, scenic rock formations or significant outcrops. Based on background review and limited field reconnaissance, there are distinctive geologic features that are present in some of the rock formations in the Project study area.

Geologic features traversed by the proposed segments in the BRRTP study area that are considered distinctive, and would have a high sensitivity rating, include the white tuff (volcanic ash) marker beds that are mapped and outcrop in the Bouquet Canyon/Vasquez Canyon area traversed by Segment I.

Rock formations in the Project study area are present in the southern part of Segment D, and in Segments G, 2a, H, I, J, and portions of Segment K. The majority of these geologic formations contains more common rock outcrops, exposed road cuts and soil-covered areas, and is not considered highly distinctive. However, distinctive geologic features may be present in limited areas of some rock formations in the Project study area not indicated on geologic maps or observed during field reconnaissance. Therefore, these rock formation units have been assigned a moderate sensitivity rating.

The Mojave Desert and Antelope Valley portions of the Project, and other low-lying valley areas with alluvium and soil cover, do not comprise rock formations at the ground surface and do not contain distinctive geologic features. These areas have been assigned a low sensitivity rating.

A summary of sensitivity ratings and potential initial impact levels due to distinctive geologic features is provided below in Table 18, and is presented on a 1/10th mile basis in the Impact Assessment Table in Appendix A.

The construction of the transmission Project would result in grading and excavation activities for tower and access road construction in areas of rock formations. Grading of rock formations can often be difficult, and designers and contractors typically prefer to avoid this more costly operation. Design plans and site grading could be achieved to facilitate the landforms and surrounding gradients as much as possible in efforts to reduce Project costs and thus avoid more distinctive geologic features. Therefore, the impacts related to the alteration or modification of distinctive geologic features would be reduced. Assessment of the potential for impacts to distinctive geologic features would be evaluated during the design phase of the Project when plans are being developed, and mitigation techniques would be developed, as appropriate, to reduce the impacts to distinctive geologic features to low levels. Therefore, the potential residual impacts due to distinctive geologic features are considered low with anticipated mitigation.

TABLE 18 – SUMMARY OF POTENTIAL INITIAL IMPACTS TO DISTINCTIVE GEOLOGIC FEATURES[1]

SEGMENT	LENGTH OF SEGMENT (MILES)	LOW IMPACT LEVEL AREAS TRAVERSED (MILES)	MODERATE IMPACT LEVEL AREAS TRAVERSED (MILES)	HIGH IMPACT LEVEL AREAS TRAVERSED (MILES)
A	13.2	13.2	0.0	0.0
B	26.5	26.5	0.0	0.0
C	21.7	21.7	0.0	0.0
D	48.2	17.0	31.2	0.0
E	11.3	10.4	0.9	0.0
F	3.6	3.6	0.0	0.0
115th	4.8	3.7	1.1	0.0
G	21.2	4.5	16.7	0.0
2a	6.6	0.1	6.4	0.0
H	19.8	2.8	17.0	0.0
I	31.9	6.3	23.7	0.4
J	12.0	0.3	11.7	0.0
K	15.4	2.2	13.2	0.0

Notes:

[1] Dibblee, 1997c, 1997f, 2002b; field observations.

7.1.3. Surface Rupture

The high probability for surface fault rupture within the Project study area is along active faults, particularly along the active faults designated as Earthquake Fault Zones. There is a high impact associated with construction of Project improvements across the traces of active faults and areas within the Earthquake Fault Zones. Other potentially active and inactive faults are located in the study area and underlie some of the proposed segments. Due to the less active nature of these types of faults, they have been assigned a moderate impact to the Project. A summary of potential initial impact levels due to faults crossed by the proposed Project segments is presented on a 1/10th mile basis in the Impact Assessment Table in Appendix A. A summary of potential initial impact levels due to earthquake fault zones is provided below in Table 19, and is presented on a 1/10th mile basis in the Impact Assessment Table in Appendix A.

Development within Earthquake Fault Zones would need further evaluation to address the potential for fault rupture. The initial impacts related to surface fault rupture are high. Damage could occur to the proposed transmission line improvements due to fault rupture if those elements are constructed across the fault rupture surface. Damages may include offset/damage to towers or roadways at portions of the segments crossing the fault rupture; damage to structural elements of the transmission towers that are placed across the fault rupture; or damage to facilities built across the fault rupture. Assessment of the surface fault rupture potential would be evaluated prior to design and construction of Project improvements and incorporated into the design, as appropriate, to reduce the impacts related to surface rupture to low levels. Therefore, the potential residual impacts due to surface fault rupture are considered to be low with incorporation of mitigation techniques such as fault trenching to check for fault traces and re-locating towers to avoid fault traces, as appropriate.

TABLE 19 – SUMMARY OF POTENTIAL INITIAL IMPACTS DUE TO EARTHQUAKE FAULT ZONES

SEGMENT	LENGTH OF SEGMENT (MILES)	HIGH IMPACT LEVEL EARTHQUAKE FAULT ZONES TRAVERSED (MILES)[1]
A	13.2	1.4
B	26.5	None
C	21.7	None
D	48.2	1.5
E	11.3	None
F	3.6	None
115th	4.8	None
G	21.2	0.9
2a	6.6	None
H	19.8	0.8
I	31.9	1.5
J	12.0	None
K	15.4	2.4

Notes:
[1] Hart and Bryant, 1997 (formerly Alquist-Priolo Special Studies Zones).

7.1.4. Seismic Ground Shaking

The seismic hazard likely to impact the Project area is ground shaking during an earthquake on one of the nearby or distant active faults. The level of ground shaking at a given location depends on many factors, including the size and type of earthquake, distance from the earthquake, and subsurface geologic conditions. The size and type of construction also affects how particular structures perform during ground shaking. Ground shaking could cause detrimental damage to Project improvements if the appropriate design for the anticipated level of shaking is not considered. Damages due to ground shaking could include misaligned towers and other structural elements, and cracks in concrete foundations, walls and structures such as the proposed Haskell Canyon Switching Station.

Based on the review of seismic data, peak horizontal ground accelerations in the range of 0.25 g to 0.80 g are anticipated to affect the Project study area. Peak horizontal ground accelerations less than 0.30 g are considered to have a low initial impact; peak horizontal ground accelerations in the range of 0.30g to 0.40g are considered to have a moderate initial impact; and peak horizontal ground accelerations in the range of 0.50g to 0.80g are considered to have a high initial impact. A summary of potential initial impact levels due to ground shaking is provided below in Table 20, and is presented on a 1/10th mile basis in the Impact Assessment Table in Appendix A.

Assessment of the ground shaking potential would be evaluated prior to design and construction of Project improvements and incorporated into the design, as appropriate, to reduce the impacts related to seismic ground shaking to low levels. Therefore, the potential residual impacts due to ground shaking are considered to be low with incorporation of mitigation techniques such as designing the structural elements of the transmission line system to resist or accommodate appropriate site-specific ground motions.

TABLE 20 – SUMMARY OF POTENTIAL INITIAL IMPACTS DUE TO GROUND SHAKING

SEGMENT	APPROXIMATE GROUND SHAKING POTENTIAL[1] (% OF THE ACCELERATION DUE TO GRAVITY, g)	IMPACT LEVEL RANGE	LENGTH OF SEGMENT (MILES)	LOW IMPACT LEVEL TRAVERSED (MILES)	MODERATE IMPACT LEVEL TRAVERSED (MILES)	HIGH IMPACT LEVEL TRAVERSED (MILES)
A	0.30	Moderate	13.2	0.0	13.2	0.0
B	0.25 – 0.40	Low to Moderate	26.5	2.7	23.8	0.0
C	0.30	Moderate	21.7	0.0	21.7	0.0
D	0.30 – 0.60	Moderate to High	48.2	0.0	34.8	13.4
E	0.30 – 0.40	Moderate	11.3	0.0	11.3	0.0
F	0.40 – 0.60	Moderate to High	3.6	0.0	3.1	0.5
115th	0.40 – 0.60	Moderate to High	4.8	0.0	1.4	3.4
G	0.40 – 0.80	Moderate to High	21.2	0.0	11.2	10.0
2a	0.60 – 0.80	High	6.6	0.0	0.0	6.5
H	0.40 – 0.60	Moderate to High	19.8	0.0	9.2	10.5
I	0.40 – 0.80	Moderate to High	31.9	0.0	15.8	16.1
J	0.40	Moderate	12.0	0.0	12.0	0.0
K	0.40 – 0.80	Moderate to High	15.4	0.0	2.7	12.7

Notes:
[1] USGS (2002rev) data

7.1.5. Liquefaction

Review of the state maps and data indicate that portions of some segments of the Project are underlain by potential liquefaction zones. Liquefaction could cause damage to proposed Project improvements without appropriate consideration during design, and areas that are mapped as liquefaction zones have a potentially high impact on the Project. The potential damaging effects of liquefaction include differential settlement, loss of ground support for foundations, ground cracking, heaving and cracking of slabs due to sand boiling, buckling of deep foundations due to liquefaction-induced ground settlement, and lateral spreading along embankments and natural slopes along drainages. A summary of potential initial impact levels due to liquefaction hazard zones is provided below in Table 21, and is presented on a 1/10th mile basis in the Impact Assessment Table in Appendix A.

The State of California Seismic Hazards Mapping Program produces maps identifying potential liquefaction hazard zones, and has produced these maps for some quadrangles within the Project study area. Many quadrangles within the study area have not been mapped by the State. Potential liquefaction hazard zones underlying proposed route segments in the study area that have been mapped by the State are included in the evaluation, where available. In order to make a comparison of the proposed route segments for areas of available data and areas that do not have available data, a ratio of the miles of liquefaction zones to the miles of available data for each segment is presented below in Table 21.

According to Seismic Hazards Zones Maps published by the State of California, portions of the Project are mapped within areas that are considered susceptible to liquefaction. In addition, areas of the Project not mapped in a Seismic Hazards Zone may have potential for liquefaction. Assessment of the liquefaction potential would be evaluated prior to design and construction of Project improvements and incorporated into the design, as appropriate, to reduce the impacts related to liquefaction to low levels. Therefore, the potential residual impacts due to liquefaction are considered to be low with incorporation of mitigation techniques such as avoiding the liquefaction zone by moving tower locations upslope from valley bottoms, in-situ ground modification, or supporting towers with piles at depths designed specifically for liquefaction.

TABLE 21 – SUMMARY OF POTENTIAL INITIAL IMPACTS DUE TO LIQUEFACTION HAZARD ZONES

SEGMENT	LENGTH OF SEGMENT (MILES)	AVAILABLE DATA (MILES)	HIGH IMPACT LEVEL LIQUEFACTION HAZARD ZONES TRAVERSED (MILES)[1]	RATIO OF LIQUEFACTION ZONES TO AVAILABLE DATA
A	13.2	0.0	None	0.0%
B	26.5	6.2	None	0.0%
C	21.7	0.0	None	0.0%
D	48.2	8.8	1.2	13.6%
E	11.3	3.6	None	0.0%
F	3.6	3.6	None	0.0%
115th	4.8	4.8	0.7	14.6%
G	21.2	10.0	1.9	19.0%
2a	6.6	5.2	None	0.0%
H	19.8	11.2	2.2	19.6%
I	31.9	31.9	10.4	32.6%
J	12.0	7.3	1.1	15.1%
K	15.4	15.4	8.1	52.6%

Notes:

[1] Data from California Geological Survey Seismic Hazards Mapping Program for available quadrangles in the study area (some quadrangles and data not available).

7.1.6. Landslides

The review of referenced geologic maps and field reconnaissance indicates that existing mapped landslides are present along some proposed segments of the Project. Additionally, some steep areas of the Project have been designated as potential Earthquake-Induced Landslide Hazard Zones by the State of California. Some mapped landslides and potential earthquake-induced landslide zones occur at the same location within the Project study corridors. Both the mapped landslide areas and potential Earthquake-Induced Landslide Hazard Zones are considered to have a potentially high initial impact on the Project, if improvements are constructed on the landslide areas. A summary of potential initial impact levels due to mapped landslides is provided below in Table 22, and is presented on a 1/10th mile basis in the Impact Assessment Table in Appendix A. A summary of potential initial impact levels due to earthquake-induced landslide hazard zones is provided below in Table 23, and is presented on a 1/10th mile basis in the Impact Assessment Table in Appendix A.

Geologic maps utilized to evaluate existing landslides in the Project study area were available for the steep mountainous areas within the ANF and surrounding mountainous areas where landslides may occur, generally along Segments D, G, 2a, H and I. In order to make a comparison of the proposed route segments, a ratio of the miles of mapped landslides to the miles of available data for each segment is included in Table 22. The State of California Seismic Hazards Mapping Program produces maps identifying potential earthquake-induced landslide hazard zones, and has produced these maps for some quadrangles within the Project study area. Many quadrangles within the study area have not been mapped by the State. Potential earthquake-induced landslide hazard zones underlying proposed route segments in the study area that have been mapped by the State are included in the evaluation, where available. In order to make a comparison of the proposed route segments for areas of available data and areas that do not have available data, a ratio of the miles of earthquake-induced landslide zones to the miles of available data for each segment is included in Table 23.

Portions of the Project located in areas of steep terrain (including mapped landslide areas and areas that do not have mapped landslides) may have potential landslide hazard. Slope areas within the study area, including constructed cut slopes, fill slopes, and natural slopes, could potentially be affected by landsliding or other steep slope problems. Slopes may have potential for surficial slope failures and/or mudflows during rainfall. Slopes cut in bedrock may be subject to rock fall, rock slides, or other rock slope failures where discontinuities, such as joints and fractures, or weathered rock are encountered. Landslides and surficial slope failures (mudflows), if not mitigated, can cause damage to slopes, embankments, roadways, transmission towers, foundations and other structures that are founded on or affected by the landslide. Due to the relatively flat-lying nature of some segments of the Project in the Antelope Valley, Mojave Desert, and valleys, landslide hazards are considered low in those areas of gentle slopes.

Assessment of the landslide and mudflow potential in areas of Project improvements would be evaluated prior to design and construction improvements and incorporated into the design, as appropriate, to reduce the impacts related to landslides to low levels. Therefore, the potential residual impacts due to landslides are considered to be low with incorporation of mitigation techniques such as avoiding landslides by moving tower locations, excavating potentially unstable earth materials, slope stabilization methods, or building of retaining structures.

TABLE 22 – SUMMARY OF POTENTIAL INITIAL IMPACTS DUE TO MAPPED LANDSLIDES

SEGMENT	LENGTH OF SEGMENT (MILES)	AVAILABLE DATA (MILES)[1]	HIGH IMPACT LEVEL MAPPED LANDSLIDE AREAS TRAVERSED (MILES)[1]	RATIO OF MAPPED LANDSLIDE AREAS TO AVAILABLE DATA
A	13.2	0.0	None	0.0%
B	26.5	6.2	None	0.0%
C	21.7	0.0	None	0.0%
D	48.2	26.0	6.6	25.4%
E	11.3	3.6	None	0.0%
F	3.6	3.6	None	0.0%
115th	4.8	4.8	None	0.0%
G	21.2	21.2	0.2	0.9%
2a	6.6	6.5	None	0.0%
H	19.8	19.8	2.0	10.1%
I	31.9	31.9	4.1	12.9%
J	12.0	12.0	5.5	44.7%
K	15.4	15.4	2.7	17.5%

Notes:

[1] Data from available geologic maps by Dibblee; and from CGS Seismic Hazards Zones Reports for available quadrangles in the study area (some quadrangles and data not available).

TABLE 23 – SUMMARY OF POTENTIAL INITIAL IMPACTS DUE TO EARTHQUAKE-INDUCED LANDSLIDE HAZARD ZONES

SEGMENT	LENGTH OF SEGMENT (MILES)	AVAILABLE DATA (MILES)[1]	HIGH IMPACT LEVEL EARTHQUAKE-INDUCED LANDSLIDE AREAS TRAVERSED (MILES)[1]	RATIO OF EARTHQUAKE-INDUCED LANDSLIDE AREAS TO AVAILABLE DATA
A	13.2	0.0	None	0.0%
B	26.5	6.2	None	0.0%
C	21.7	0.0	None	0.0%
D	48.2	8.8	5.6	63.6%
E	11.3	3.6	None	0.0%
F	3.6	3.6	None	0.0%
115th	4.8	4.8	0.1	2.1%
G	21.2	10.0	2.6	26.0%
2a	6.6	5.2	0.6	11.5%
H	19.8	11.2	4.8	42.9%
I	31.9	31.9	18.8	58.9%
J	12.0	7.0	7.0	100.0%
K	15.4	15.4	9.3	60.4%

Notes:

[1] Data from CGS Seismic Hazards Zones Reports for available quadrangles in the study area (some quadrangles and data not available).

7.1.7. Soil Erosion

Based on NRCS soil data, surface soils with erosion potential ranging from slight to moderate to severe and very severe have been mapped in the Project study area. In addition to the loss of surface soils as a geologic resource, erosion of soils and earth materials can cause damage to Project improvements such as tower foundations, switching station facilities, access roads, and manufactured slopes. Erosion can potentially result in the loss of support or undermining of these Project improvements. Construction of Project improvements on soils with a severe to very severe erosion potential would have a high initial impact to Project improvements. Soils with a moderate erosion potential would have a moderate initial impact, and soils with a slight erosion potential would have a low initial impact. A summary of potential initial impact levels due to soil erosion is provided below in Table 24, and is presented on a 1/10th mile basis in the Impact Assessment Table in Appendix A. The soil erosion potential at the proposed Haskell Canyon Switching Station has been categorized as severe, and the impact of erosion at this site is considered high. The soil erosion potential at the expanded Barren Ridge Switching Station has been categorized as slight, and the impact at this site is considered low.

Future construction activities for the Project would result in ground surface disruption during excavation, grading, and trenching that would create the potential for erosion to occur. However, the erosion potential during construction can be mitigated with prudent site management practices during construction. Following development of site improvements, erosion can be mitigated by long-term erosion management practices incorporated into the design and maintenance of the Project. With incorporation of mitigation techniques, future site erosion can be reduced. Potential soil erosion related to the Project development is considered to have a low residual impact with mitigation incorporation.

TABLE 24 – SUMMARY OF POTENTIAL INITIAL IMPACTS DUE TO SOIL EROSION[1]

SEGMENT	LENGTH OF SEGMENT (MILES)	LOW IMPACT LEVEL AREAS TRAVERSED (MILES)	MODERATE IMPACT LEVEL AREAS TRAVERSED (MILES)	HIGH IMPACT LEVEL AREAS TRAVERSED (MILES)
A	13.2	13.2	0.0	0.0
B	26.5	25.9	0.0	0.6
C	21.7	21.5	0.2	0.0
D	48.2	17.5	4.7	26.0
E	11.3	10.8	0.5	0.0
F	3.6	3.6	0.0	0.0
115th	4.8	2.9	0.2	1.7
G	21.2	4.6	1.9	14.7
2a	6.6	0.0	0.7	5.8
H	19.8	2.2	1.6	16.0
I	31.9	5.3	7.0	19.6
J	12.0	0.3	0.4	11.6
K	15.4	0.9	0.4	8.8

Notes:

[1] Data from USDA (2008d).

Data for some portions of Segment K are not available.

7.1.8. Subsidence

The background review did not indicate that subsidence has been recently reported in the Project area. No subsidence-induced ground cracks were observed crossing the proposed Project segments or switching station sites during field reconnaissance. Damage to existing transmission improvements in these areas was not reported. However, the geologic components for subsidence are present in some parts of the Project study area (valley areas), and subsidence is considered to have a potentially low initial impact.

7.1.9. Settlement

Compressible natural soils and undocumented fills pose the risk of adverse settlement under static loads imposed by new embankment fills, roadway fills, tower foundations and associated structures. Differential settlement of soils can cause damage to Project improvements including concrete structures and foundations, retaining walls, associated switching stations and maintenance structures and pavements. Constructing Project improvements on soils known to have a potential for settlement would have a high initial impact to the Project.

Since the Project would involve construction of new improvements that would be loaded upon the existing soils, potential settlement and/or collapsible soils should be a consideration in design and construction of Project improvements. Assessment of the potential for soils prone to settlement would be evaluated prior to design and construction of Project improvements and mitigation techniques would be developed, as appropriate, to reduce the impacts related to settlement to low levels. Therefore, the potential residual impacts due to soil settlement are considered low with incorporation of mitigation techniques such as avoiding areas prone to settlement, removal and recompaction of compressible soils, specialized foundation design including the use of deep foundation systems to support structures, and in-situ ground modification.

7.1.10. Expansive Soils

Based on limited NRCS soil data, potentially expansive soils may be present along portions of Segments D and K of the proposed Project. Expansive soils may also be present in areas of the Project not indicated by the limited NRCS soil data.

Expansive soils are characterized by their ability to undergo significant volume change (shrink or swell) due to variations in moisture content. Changes in soil moisture content can result from rainfall, irrigation, pipeline leakage, surface drainage, perched groundwater, drought, or other factors. Volumetric change of expansive soil may cause excessive cracking and heaving of structures with shallow foundations, concrete slabs-on-grade, or pavements supported on these materials. Constructing Project improvements on soils known to be potentially moderately to highly expansive would have a moderate to high impact to the Project. Constructing Project improvements on soils categorized with a low expansion potential would have a low impact to Project improvements. The relative potential impact of expansive soils is low for deep foundations such as deep tower foundations, since volumetric changes of expansive soils diminish with overburden depth.

Detailed assessment of the potential for expansive soils would be evaluated during the design phase of the Project and mitigation techniques would be developed, as appropriate, to reduce the impacts related to expansive soils to low levels. Therefore, the potential residual impacts due to expansive soils are considered low with incorporation of mitigation techniques such as avoiding areas of expansive soils, overexcavation and replacement with non-expansive soil, soil treatment, moisture control, and/or specific structural design for expansive soil conditions developed during design of the Project.

7.1.11. Corrosive Soils

Based on NRCS soil data, potentially corrosive soils may be present along some segments of the proposed Project.

Corrosive soils, especially in areas of shallow groundwater that may be present in portions of the study area, can present a corrosion hazard to concrete in contact with soil, concrete and metal foundations, and other buried metal structures such as utility lines. Areas of corrosive soil could cause of premature deterioration of these underground structures or foundations. Constructing Project improvements on soils with a low corrosive potential would have a low initial impact to the improvements; constructing Project improvements on soils with a moderate corrosive potential would have a moderate initial impact to the improvements; and constructing improvements on soils known to be potentially highly corrosive would have a high initial impact to the Project. A summary of potential initial impact levels due to corrosive soils is provided below in Table 25, and is presented on a 1/10th mile basis in the Impact Assessment Table in Appendix A.

Assessment of the potential for corrosive soils would be evaluated during the design phase of the Project through soil testing procedures, and mitigation techniques would be developed, as appropriate, to reduce the impacts related to corrosive soils to low levels. Therefore, the potential residual impacts due to corrosive soils are considered low with incorporation of mitigation techniques such as avoiding areas of corrosive soils, the use of concrete resistant to sulfate exposure and selection of the appropriate type of cement and water/cement ratio, protective coatings for metallic substructures and components, and the use of alternative (corrosion resistant) materials.

TABLE 25 – SUMMARY OF POTENTIAL INITIAL IMPACTS DUE TO CORROSIVE SOILS[1]

SEGMENT	LENGTH OF Segment (Miles)	AREAS WITH AVAILABLE DATA (MILES)	LOW IMPACT CORROSIVE SOIL POTENTIAL (MILES)	MODERATE IMPACT CORROSIVE SOIL POTENTIAL (MILES)	HIGH IMPACT CORROSIVE SOIL POTENTIAL (MILES)
A	13.2	13.2	0.0	9.5	3.7
B	26.5	26.2	2.9	9.9	13.4
C	21.7	21.7	2.4	13.2	6.1
D	48.2	30.2	15.1	6.6	8.5
E	11.3	11.3	3.4	1.5	6.4
F	3.6	2.8	1.5	1.3	0.0
115th	4.8	4.7	1.8	2.8	0.0
G	21.2	6.5	2.6	3.6	0.3
2a	6.6	0.7	0.0	0.7	0.0
H	19.8	5.3	1.6	3.2	0.5
I	31.9	28.9	8.4	15.4	5.1
J	12.0	8.6	1.3	0.3	7.0
K	15.4	9.7	4.7	3.2	1.8

Notes:

[1] Data from USDA(2007b, and 2008a, b, c and d). When multiple soils occur in a single 1/10th mile, the higher potential impact corrosive value is considered.

7.1.12. Groundwater

Groundwater depths underlying the Project components are variable and are reported to range from less than 10 feet deep to more than 300 feet deep. Based on the reported depths to groundwater and anticipated depth of construction activities for new foundations for Project components, groundwater may affect portions of the proposed Project. In areas where shallow groundwater is reported to be 25 feet deep or less, groundwater is considered to have a high initial impact to the Project. Groundwater ranging from 25 to 50 feet deep is considered to have a moderate initial impact; and groundwater levels deeper than 50 feet have a low initial impact to the Project. A summary of potential initial impact levels due to groundwater is provided in Table 26, and is presented on a 1/10th mile basis in the Impact Assessment Table in Appendix A.

Subsurface construction activities for Project implementation at the site are anticipated to consist of relatively shallow excavations for roadway construction and tower pads and may involve deeper excavations for foundations and other improvements. Groundwater in excavations can cause instability of the excavations, and present a constraint to the construction of foundations. Shallow groundwater less than 50 feet deep, if encountered, can have adverse effects on the construction activities for the Project.

Due to the potentially shallow groundwater levels reported along segments of the Project, wet or saturated soil conditions may be encountered in excavations during construction. In addition, areas of shallow groundwater may be encountered where not previously reported, and areas of perched groundwater may be encountered along segments of the Project. Groundwater in excavations can cause instability of the excavations, and present a constraint to the construction of foundations. Excavations for foundations extending below the groundwater table or in areas with shallow perched groundwater may need to be cased/shored and/or dewatered to maintain stability of the excavations and provide access for construction. Saturated soils encountered in excavations below the groundwater can be difficult for the contractor to handle. Groundwater from the excavation spoils brought to the surface can contribute to soil erosion and surface water quality during construction.

Shallow groundwater can also impact ground stability, and foundation design of proposed improvements, as well as the methods and costs of construction. If not adequately monitored by the contractor, dewatering of excavations could induce consolidation of the underlying soils, which could cause differential settlement of existing structures and improvements located near the excavation. The amount of consolidation due to dewatering would depend on many factors, including the areal extent and depth of dewatering, soil type, soil density, and the methods used by the dewatering contractor. Excavations for the underground structures would need to be performed with care to reduce the potential for lateral deflection of excavation sidewalls and/or shoring, which could also cause differential movement of structures located near the excavation.

Groundwater levels may be influenced by seasonal variations, variations in ground surface topography, precipitation, irrigation practices, soil/rock types, groundwater pumping, and other factors and are subject to fluctuations. Shallow perched groundwater or groundwater seepage may be present in locations. Further study, including subsurface exploration, would be performed during the design phase to evaluate the presence of groundwater, seepage, and/or perched groundwater at the site and the potential impacts on design and construction of Project improvements. Assessment of the potential for shallow groundwater would be evaluated during the design phase of the Project and mitigation techniques would be developed, as appropriate, to reduce the impacts related to shallow groundwater to low levels. Therefore, the potential residual impacts due to shallow groundwater are considered low with incorporation of mitigation techniques such as construction dewatering.

TABLE 26 – SUMMARY OF POTENTIAL INITIAL IMPACTS DUE TO GROUNDWATER[1]

SEGMENT	LENGTH OF SEGMENT (MILES)	AREAS WITH NO AVAILABLE DATA (MILES)	MILES OF LOW IMPACT LEVEL TRAVERSED (MILES)	MILES OF MODERATE IMPACT LEVEL TRAVERSED (MILES)	MILES OF HIGH IMPACT LEVEL TRAVERSED (MILES)
A	13.2	0.0	0.0	0.0	0.0
B	26.5	2.6	2.6	0.0	0.0
C	21.7	0.1	0.1	0.0	0.0
D	48.2	0.5	0.3	0.0	0.2
E	11.3	0.2	0.2	0.0	0.0
F	3.6	0.5	0.2	0.0	0.3
115th	4.8	0.1	0.1	0.0	0.0
G	21.2	1.5	0.1	0.1	1.3
2a	6.6	0.0	0.0	0.0	0.0
H	19.8	1.2	0.0	0.0	1.2
I	31.9	5.2	0.1	0.0	5.1
J	12.0	0.2	0.0	0.0	0.2
K	15.4	4.5	0.1	2.2	2.2

Notes:

[1] Based on available data from CDWR (2008), and CGS Seismic Hazards Evaluation Reports.

7.1.13. Inundation from Dam Failure, Seiche or Tsunami

Based on the review of the County of Los Angeles General Plan Safety Element (1990), portions of the proposed Project segments are located in several potential dam failure inundation zones. Inundation due to dam failure could cause damage to Project improvements including erosion of earth materials which could undermine foundation support. The potential initial impacts due to inundation from dam failure are considered high. A summary of potential initial impact levels due to dam failure inundation is provided in Table 27, and is presented on a 1/10th mile basis in the Impact Assessment Table in Appendix A.

Dams and reservoirs in California are monitored by various governmental agencies (such as the State of California Division of Safety of Dams and the U.S. Army Corps of Engineers) to guard against the threat of dam failure or seiche. Current design and construction practices, and ongoing programs of review, modification, seismic retrofitting or total reconstruction of existing dams are intended to see that dams are capable of withstanding the maximum credible earthquake for the site. Due to the regulatory monitoring of dams and reservoirs, the residual impact of inundation due to dam failure is considered a low impact to the Project.

The General Plans of Los Angeles and Kern Counties did not indicate the potential for inundation due to seiche from water bodies within the Project study area. The Project site is not within an area considered to be susceptible to tsunami inundation due to the distance from the Pacific coast. Therefore, the proposed Project would not result in, or expose people to, impacts related to tsunamis.

TABLE 27 – SUMMARY OF POTENTIAL INITIAL IMPACTS DUE TO DAM FAILURE INUNDATION

SEGMENT	LENGTH OF SEGMENT (MILES)	HIGH IMPACT LEVEL INUNDATION AREAS TRAVERSED (MILES)[1]
A	13.2	None
B	26.5	None
C	21.7	None
D	48.2	1.5
E	11.3	None
F	3.6	0.9
115th	4.8	None
G	21.2	1.4
2a	6.6	None
H	19.8	0.3
I	31.9	None
J	12.0	1.5
K	15.4	1.0

Notes:

[1] Data from County of Los Angeles, 1990; Kern County, 2005; Kern County, 2007.

7.2 NEW 230 KV CIRCUIT

Between the proposed Haskell Canyon Switching Station and the existing Castaic Power Plant, LADWP proposes the addition of 12 miles of a new 230 kV transmission circuit onto existing Castaic – Olive 230 kV Transmission Line structures (towers 1-1 through 12-1).

The addition of a new circuit on existing towers would require many of the same activities of a new transmission line (surveying of ROW, rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, ground rod installation, and cleanup). The work would be within existing ROW, and existing access and spur roads would be utilized. The evaluation of the proposed new 230kV circuit has been incorporated into the affected environment, impact results and impact assessment sections of this preliminary evaluation as the Segment J corridor.

7.3 RECONDUCTORING

LADWP proposes the reconductoring of 76 miles of the existing BR-RIN 230 kV transmission line with larger conductors from the Barren Ridge Switching Station to Rinaldi Substation. The BR-RIN is located along Segments A, B, G, and K. From Haskell Canyon headed south to Rinaldi Substation, the BR-RIN is located on the same four-circuit structures as the Castaic-RS-J, Castaic-Sylmar, and Castaic-Olive 230 kV transmission lines.

The upgrade of the existing BR-RIN would also necessitate many of the same activities of the new transmission line (surveying of ROW, rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, ground rod installation, and cleanup). The existing line would be removed and used to pull the new conductor. Some of the towers would need to be modified or replaced, and/or foundations reinforced, to carry the additional weight of the new heavier conductor. The work would remain within the existing ROW.

Since the reconductoring of the BR-RIN 230 kV transmission line may involve activities similar to construction of the proposed new transmission line, the evaluation of the reconductoring of the existing transmission line is presented in the affected environment, impact results and impact assessment sections of this preliminary evaluation as Segments A, B, G and K.

7.4 NEW HASKELL CANYON SWITCHING STATION

As a component of the BRRTP, LADWP proposes the construction of the new Haskell Canyon Switching Station in Haskell Canyon, south of the ANF at the convergence of several existing and proposed 230 kV transmission lines (the existing BR-RIN, the proposed double-circuit Barren Ridge-Haskell Canyon, existing Castaic-Northridge, Castaic-Sylmar, Castaic-Olive, and the proposed Castaic to Haskell Canyon). The station would be 500 feet by 600 feet to accommodate the necessary electrical equipment. Construction of the new Haskell Canyon Switching Station would consist of clearing of access roads, site grading and development, installation of electrical conduits for equipment power and control, and installation of structures and equipment. Equipment needed for station construction would include backhoes, drill rigs, concrete trucks, flatbeds and trucks. Cranes, man-lifts, portable welding units, line trucks and mechanic trucks would also be utilized.

Evaluation of the affected environment for the proposed new Haskell Canyon Switching Station is presented in the Affected Environment section of this preliminary evaluation. In summary, review of referenced soil, geologic, and seismic background data indicates that the Haskell Canyon site is underlain by Tertiary marine and non-marine sedimentary formations. The USDA soil type underlying the site is mapped as the Calciserollic Xerochrepts-Calleguas family-Modesto family, which has a high sensitivity rating based on the severe erosion potential. Distinctive geologic features were not observed at the Haskell Canyon site. The site is not crossed by a known active fault, and the potential for surface rupture is considered low. Potential seismic ground shaking at the site is on the order of 0.40g. The site is not located in a liquefaction hazard zone or earthquake-induced landslide hazard zone based on the State of California Seismic Hazards Zones map. Landslides are mapped and were observed in the vicinity of the Haskell Canyon site. There are no USDA data available regarding the potential for expansive soils or corrosive soils at the site. There are no data available regarding groundwater levels at the Haskell Canyon site. The Haskell Canyon site is not located in a dam failure inundation zone.

Assessment of the potential initial impacts for construction of the new Haskell Canyon Switching Station includes the following impact results:

- The soil sensitivity rating at Haskell Canyon has been categorized as high, and the initial impact of erosion of soils at this site is considered high.
- Highly sensitive distinctive geologic features were not observed at the Haskell Canyon site. Based on the sedimentary rock formations present at the Haskell Canyon site, the initial impact to distinctive geologic features is considered moderate.
- The Haskell Canyon site is not located in an Earthquake Fault Zone and the initial impacts related to surface fault rupture are considered low.
- The design PGA for the proposed Haskell Canyon station is 0.40g. The ground shaking potential at the station site is considered to have a moderate initial impact.
- The Haskell Canyon site is not located in a potential liquefaction zone based on the State of California Seismic Hazards Zones map, and the initial impacts related to liquefaction are considered low.
- The Haskell Canyon site is not located in a potential earthquake-induced landslide zone based on the State of California Seismic Hazards Zones map, and the initial impacts related to earthquake-induced landslides are considered low.
- Landslides are shown on geologic maps and landslides were observed during geologic field reconnaissance in the vicinity of the Haskell Canyon Switching Station site. Constructing the switching station on a landslide would have a high initial impact on the Project.

- There is a potential for compressible soils to be present at the Haskell Canyon site. Constructing the switching station on soils known to have a potential for settlement would have a high initial impact to the Project
- NRCS data regarding the expansive potential of surface soils at the Haskell Canyon site have not been reported. However, based on the potential presence of clay shale units at this site, moderately to highly expansive soils may be present. Constructing the switching station on known expansive soils would have a high initial impact on the Project.
- NRCS data regarding the corrosive potential of surface soils at the Haskell Canyon site have not been reported. However, corrosive soils may be present at the site, and could have a high initial impact on the Project.
- There are no data readily available regarding groundwater levels at the Haskell Canyon site. However, shallow groundwater or perched groundwater may be present at the site, and could have a high initial impact to the Project if encountered during construction.
- The Haskell Canyon site is not located in a dam failure inundation zone, and the initial impacts related to dam failure inundation are considered low.

During the design phase for the switching station site, the potential Project impacts would be evaluated through data review, geologic reconnaissance and subsurface exploration, as appropriate. The results of the site-specific evaluation would be incorporated into the design of the switching station. Through this process, the highly sensitive geologic resources that could be affected would be located and mitigation would be implemented to reduce the impacts to low levels; and the potential geologic and seismic hazards would be considered relative to the construction of the switching station, and mitigation techniques would be developed to reduce the impacts to low levels that would be appropriate for design. With the implementation of the appropriate mitigations, the initial impacts to geologic resources and impacts related to potential seismic and geologic hazards at the switching station site can be reduced to low residual levels.

7.5 EXPANSION OF BARREN RIDGE SWITCHING STATION

LADWP proposes expansion of the existing Barren Ridge Switching Station to the east side by 235 feet by 500 feet, for a total station size of 485 feet by 500 feet (5.6 acres). The expansion area of the station would include additional electrical structures for additional lines, a material staging area, a roadway within the station, and a drainage area. Expansion of the existing switching station would be similar to the construction of the Haskell Canyon Switching Station. Site construction activities would consist of installation of reinforced concrete foundations, installation of electrical conduits for equipment power and control, and installation of structures and equipment. Equipment needed for station construction would include backhoes, drill rigs, concrete trucks, flatbeds and trucks. Cranes, man-lifts, portable welding units, line trucks and mechanic trucks would also be utilized.

Evaluation of the affected environment for expansion of the Barren Ridge Switching Station (Barren Ridge) is presented in the Affected Environment section of this preliminary evaluation. In summary, review of referenced soil, geologic, and seismic background data indicates that the Barren Ridge site is underlain by Quaternary alluvial sediments. The USDA soil type underlying the site is mapped as the Arizo gravelly loamy sand, which has a low sensitivity rating based on the slight erosion potential. Distinctive geologic features were not observed at the Barren Ridge site. The site is not crossed by a known active fault, and the potential for surface rupture is considered low. Potential seismic ground shaking at the site is on the order of 0.52g. The site is not located in a liquefaction hazard zone or earthquake-induced landslide hazard zone based on the State of California Seismic Hazards Zones map. There are no landslides at the Barren Ridge site. There are no USDA data available regarding the potential for expansive soils at the site. USDA data indicate a low to moderate corrosive soil potential at the Barren Ridge site. There are no data available regarding groundwater levels at the Barren Ridge site. The Barren Ridge site is not located in a dam failure inundation zone.

Assessment of the potential initial impacts for expansion of the Barren Ridge Switching Station includes the following impact results:

- The soil sensitivity rating at Barren Ridge has been categorized as low, and the impact of erosion of soils at this site is considered low.
- Distinctive geologic features were not observed at Barren Ridge, and the initial impact to distinctive geologic features is considered low.
- The Barren Ridge site is not located in an Earthquake Fault Zone and the initial impacts related to surface fault rupture are considered low.
- The design PGA for the proposed Barren Ridge station is 0.52g. The ground shaking potential at the station site is considered to have a high initial impact.
- The Barren Ridge site is not located in a potential liquefaction zone based on the State of California Seismic Hazards Zones map, and the initial impacts related to liquefaction are considered low.
- The Barren Ridge site is not located in a potential earthquake-induced landslide zone based on the State of California Seismic Hazards Zones map, and the initial impacts related to earthquake-induced landslides are considered low.
- There are no landslides at the Barren Ridge site.
- There is a potential for compressible soils to be present at the Barren Ridge site. Constructing the expanded switching station on soils known to have a potential for settlement would have a high initial impact to the Project
- NRCS data regarding the expansive potential of surface soils at the Barren Ridge site have not been reported. However, based on the sandy nature of the surface soils mapped at the site and observed during field reconnaissance, the expansive potential of the soils at this site is considered low, and is considered to have a low initial impact to the Project.
- The corrosive soil potential at the Barren Ridge site has been categorized as low for concrete and moderate for steel according to NRCS data. Therefore, corrosive soils may be present at the site, and could have a moderate initial impact on the Project.
- There are no data available regarding groundwater levels at the Barren Ridge site. However, shallow groundwater or perched groundwater may be present at the site, and could have a high initial impact to the Project if encountered during construction.
- The Barren Ridge site is not located in a dam failure inundation zone, and the initial impacts related to dam failure inundation are considered low.

During the design phase for the expanded switching station site, the potential Project impacts would be evaluated through data review, geologic reconnaissance and subsurface exploration, as appropriate. The results of the site specific evaluation would be incorporated into the design of the expanded switching station. Through this process, the highly sensitive geologic resources that could be affected would be located and mitigation would be implemented to reduce the impacts to low levels; and the potential geologic and seismic hazards would be considered relative to the construction of the expanded switching station, and mitigation techniques would be developed to reduce the impacts to low levels that would be appropriate for design. With the implementation of the appropriate mitigations, the initial impacts to geologic resources and impacts related to potential seismic and geologic hazards at the expanded switching station site can be reduced to low residual levels.

8.0 ALTERNATIVES

NEPA and CEQA both require consideration of a reasonable range of alternatives to the Proposed Action that would feasibly attain most of the basic objectives of the Project, but avoid or substantially lessen any of the significant or adverse effects of the Project.

8.1 DEVELOPMENT OF ALTERNATIVES

A range of alternatives were identified through a siting analysis, the scoping process, and supplemental studies and consultations. A full discussion of alternatives development can be found in the Alternatives Development Report (POWER 2010).

The regional siting analysis identified nine routing opportunities (Segments A through I) for the new 230 kV transmission line between Barren Ridge Switching Station and the proposed Haskell Canyon Switching Station. Some of the routing opportunities or segments were adjusted or modified based on public input and preliminary environmental review, and preliminary electrical system studies. Each of the nine segments are discussed in detail, including impact analysis, in Section 7.0 of this report. Several of these segments were not used in the formation of alternatives as discussed below.

Segment E was recommended for elimination from analysis in the EIS/EIR. The Segment would require an additional 6.5 miles of transmission line in comparison to the Proposed Action and would not significantly reduce or avoid impacts to air quality, biological, cultural, visual, and water resources. Segment H was also recommended for elimination, due to increased impacts to air quality and noise, along with safety concerns, related to helicopter construction. Cumulative effects for the Project would also increase because of the further disturbance of revegetated and rehabilitated areas and potential for impacts from three transmission line projects in the same vicinity.

Eight routing opportunities (Segments A, B, C, D, F, G, 2a, and I) were combined to create end-to-end routing alternatives for the proposed double-circuit 230 kV transmission line between Barren Ridge Switching Station and the proposed Haskell Canyon Switching Station. In addition to routing segments, each Alternative discussed within this section would include other Project components as discussed earlier within this report. These include the addition of a new circuit on existing towers between Castaic Power Plant and Haskell Canyon, reconductoring of the existing BR-RIN transmission line, construction of a new Haskell Canyon Switching Station, and expansion of the existing Barren Ridge Switching Station. Impact assessment and impact results for each of the other Project components listed above, and which are common to each of the Alternatives, are described in Section 7.0. Descriptions and impact assessment of the routing alternatives follow in the sections below.

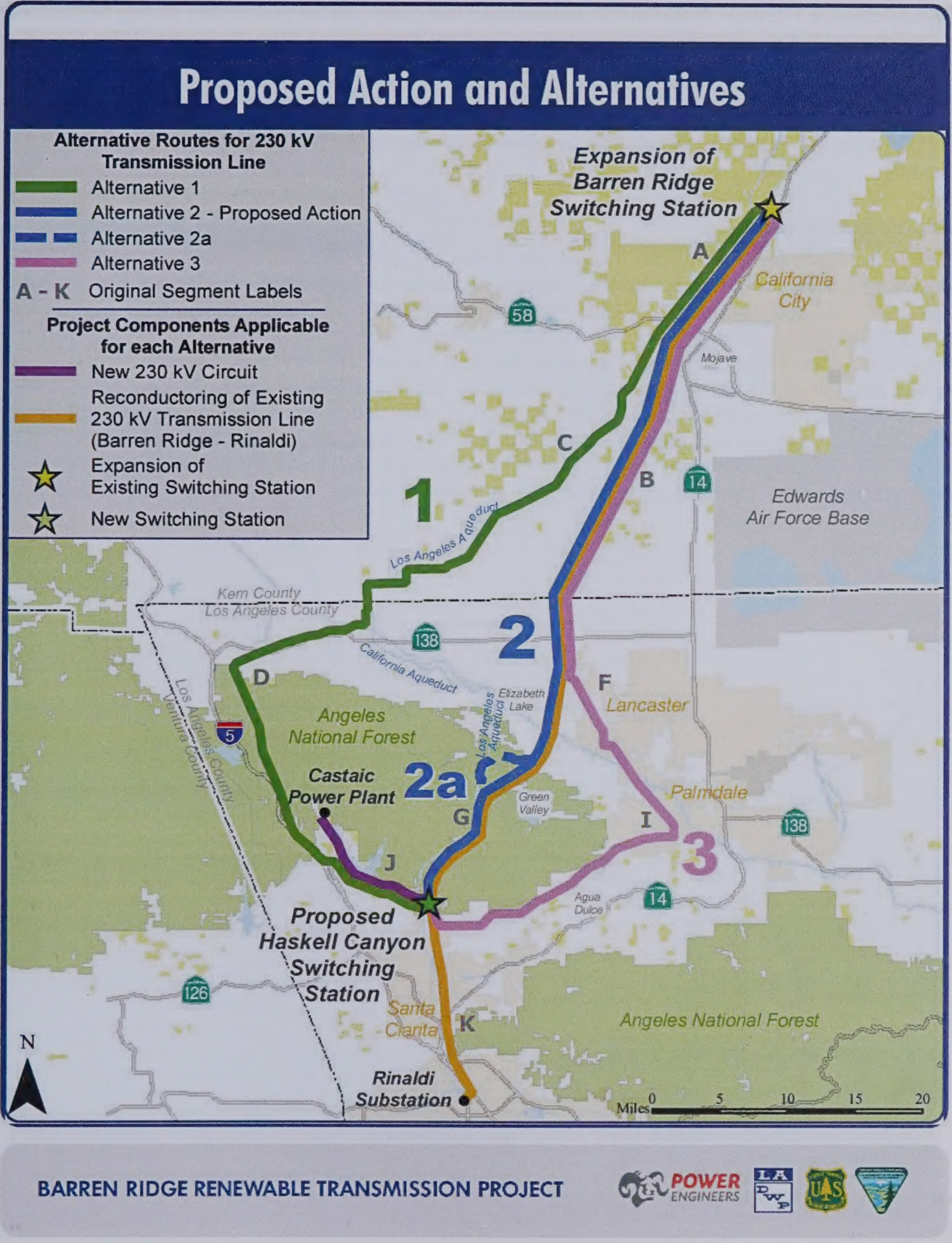
8.2 ALTERNATIVES DESCRIPTION

The following alternatives were identified as a reasonable range of alternatives to the Project that would feasibly attain most of the basic objectives of the Project, but avoid or substantially lessen any of the significant or adverse effects of the Project.

8.2.1. Action Alternatives

In addition to a new double-circuit 230 kV transmission line between the Barren Ridge and Haskell Canyon switching stations, whose route would vary among the action Alternatives, the four action Alternatives would include the following common components: the expansion of the existing Barren Ridge Switching Station, construction of a new Haskell Canyon Switching Station, reconductoring of the existing 230 kV transmission line from the Barren Ridge Switching Station to Rinaldi Substation, and the addition of a new 230 kV circuit on existing towers between the Castaic Power Plant and Haskell Canyon Switching Station. Refer to Figure 8-1.

FIGURE 8-1. ACTION ALTERNATIVES


Proposed Action and Alternatives
Alternative Routes for 230 kV Transmission Line
Alternative 1
Alternative 2 - Proposed Action
Alternative 2a
Alternative 3
A - K Original Segment Labels
Project Components Applicable for each Alternative
New 230 kV Circuit
Reconductoring of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
Expansion of Existing Switching Station
New Switching Station
Expansion of Barren Ridge Switching Station
A
B
C
D
F
G
I
J
K
1
2
2a
3
California City
Mojave
58
14
138
126
5
Edwards Air Force Base
Los Angeles Aqueduct
Kern County
Los Angeles County
California Aqueduct
Elizabeth Lake
Lancaster
Palmdale
Angeles National Forest
Castaic Power Plant
Green Valley
Agua Dulce
Los Angeles County
Ventura County
Proposed Haskell Canyon Switching Station
Santa Clarita
Rinaldi Substation
N
Miles 0 5 10 15 20
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS

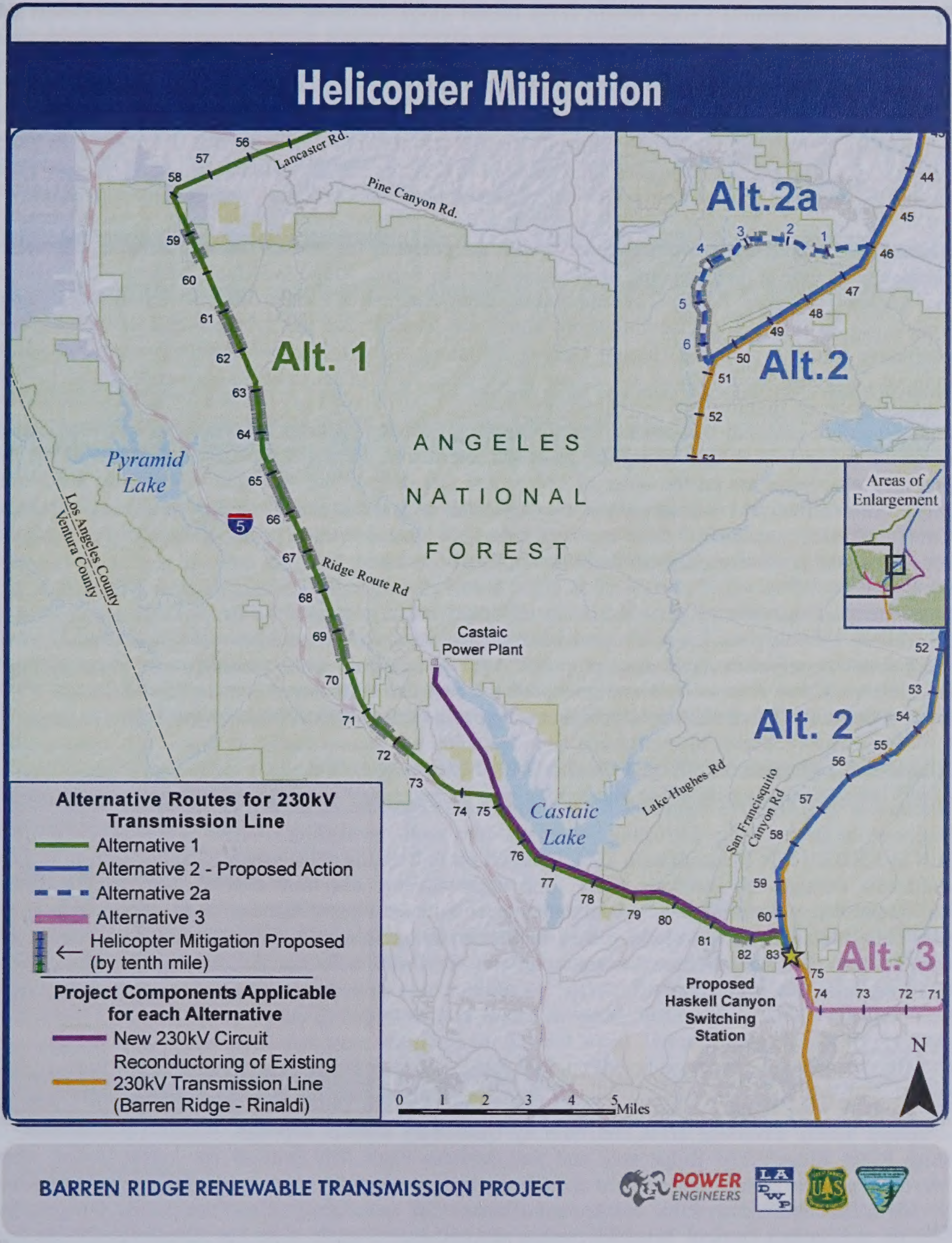
Alternative 1 (Segments A, C, and D)

The Alternative 1 230 kV double-circuit transmission line comprises the preliminary routing Segments A, C, and D, and is the longest Alternative, at 83 miles long. It would run from the Barren Ridge Switching Station to the unincorporated community of Mojave, while paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines. It would continue south-southwest to parallel the Los Angeles Aqueduct to Lancaster Road, where it would travel west to the I-5 utility corridor. It would then run southeast along LADWP's existing Castaic – Rinaldi corridor to the proposed Haskell Canyon Switching Station.

Helicopter Mitigation

Within the ANF where the terrain is steep and access is limited, the USFS would require that the new double-circuit 230 kV structures be constructed with the use of helicopters (such as the Hughes 500 or Bell 212, or Sikorsky Skycrane). Refer to Figure 8-2, the Identified Helicopter Mitigation Locations Map, which illustrates the identified locations for this mitigation. The use of helicopters for the construction of transmission tower structures would eliminate the need for new access roads to structure locations, and would therefore minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites. However, the following site and ground disturbing construction activities would be required to construct the new transmission line within the identified helicopter construction areas: portable landing pads, helicopter fly yards/staging areas, tower structure vegetation clearing, guard structures at major crossings, wire stringing sites, pullouts, and temporary access roads.

FIGURE 8-2. IDENTIFIED HELICOPTER MITIGATION LOCATIONS


Helicopter Mitigation
Alt. 1
Alt. 2
Alt.2a
Alt.2
Alt. 3
ANGELES NATIONAL FOREST
Lancaster Rd.
Pine Canyon Rd.
Ridge Route Rd
Lake Hughes Rd
San Francisquito Canyon Rd
Pyramid Lake
Castaic Lake
Castaic Power Plant
Los Angeles County
Ventura County
5
Proposed Haskell Canyon Switching Station
Areas of Enlargement
Alternative Routes for 230kV Transmission Line
Alternative 1
Alternative 2 - Proposed Action
Alternative 2a
Alternative 3
Helicopter Mitigation Proposed (by tenth mile)
Project Components Applicable for each Alternative
New 230kV Circuit
Reconductoring of Existing 230kV Transmission Line (Barren Ridge - Rinaldi)
0 1 2 3 4 5 Miles
N
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS
LA DWP

Geological Considerations

The proposed Alternative 1 route begins at the Barren Ridge Switching Station in the Mojave Desert and travels southwest along the northwestern edge of the Mojave Desert and Antelope Valley crossing areas underlain by Quaternary alluvial deposits. It crosses the San Andreas Fault Rift Zone near the western boundary of the Project study area and then runs southeast over steep mountainous areas in the ANF underlain by areas of Mesozoic granitic rock, and by Plio-Pleistocene non-marine and Tertiary marine sedimentary formations. Quaternary alluvial deposits are present in canyons and drainage areas along Alternative 1. The alternative crosses San Francisquito Canyon near the southern end of Alternative 1 and ends at the proposed Haskell Canyon Switching Station underlain by Tertiary sedimentary formations.

Alternative 1 would cross two active faults with the potential for surface rupture, including the active Garlock fault zone at the beginning of the route near the Barren Ridge Switching Station, and the active San Andreas fault zone. Potential ground shaking along Alternative 1 due to seismic activity would range from 0.30g to 0.60g. Liquefaction hazard zones are located near the southern end of the proposed alternative near the proposed Haskell Canyon Switching Station. Mapped landslides and Earthquake-Induced Landslide Hazard Zones are located in the steep ANF in the southern portion of the alternative. Variable areas of slight to very severe erosion potential exist along the proposed alternative. An area of high expansion potential is located along the existing Castaic – Rinaldi corridor. Areas of low to high corrosive soil potential exist along the proposed alternative. Reported groundwater depths along this proposed alternative are on the order of 138 to 336 feet deep in the Antelope Valley area; a 0.2 mile portion of Alternative 1 has an area of reported shallow groundwater 10 feet deep along the existing Castaic – Rinaldi corridor. 1.5 miles of Alternative 1 are located within a potential dam failure inundation zone due to the proximity to Castaic Lake and Bouquet Reservoir.

A summary of the affected environment for Alternative 1 is presented below in Table 28. In general, Alternative 1 would have lower levels of potential ground shaking than Alternatives 2, 2a and 3; would cross fewer liquefaction zones than proposed Alternatives 2, 2a and 3; would cross fewer potential landslide areas than Alternative 3 and more potential landslide areas than Alternative 2 and 2a; and would cross more areas of severe to very severe erosion potential than Alternatives 2, 2a and 3.

Alternative 2 (Segments A, B, and G) –LADWP's Proposed Action

Alternative 2, LADWP's Proposed Action, comprises Segments A, B, and G and is 61 miles long. It begins at the Barren Ridge Switching Station and runs south, paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines. It travels south from the unincorporated community of Mojave, California through the Antelope Valley and approximately one mile east of the Antelope Valley California Poppy Reserve before continuing onto National Forest System lands and ending at the proposed Haskell Canyon Switching Station. The entire route would remain within designated utility corridors and would parallel existing transmission lines. Refer to Section 1.2, Project Description, for a full description of this Alternative.

Geological Considerations

The proposed Alternative 2 route begins at the Barren Ridge Switching Station in the Mojave Desert and travels southwest along the northwestern edge of the Mojave Desert and then runs south across the Antelope Valley traversing areas underlain by Quaternary alluvial deposits. Alternative 2 crosses the steep Ritter Ridge/Portal Ridge area and San Andreas Fault Rift Zone in the Leona Valley where Mesozoic granitic rocks, Pelona Schist and Pliocene sedimentary formations underlie the proposed route. It runs south/southeast over the steep, mountainous ANF and through San Francisquito Canyon, Dry Canyon and Haskell Canyon. The ANF portion of Alternative 2 south of the San Andreas Fault Rift Zone is underlain by areas of Mesozoic granitic rock, Precambrian metamorphic rock, Pelona Schist, Tertiary marine and non-marine sedimentary formations, and Quaternary alluvium.

Alternative 2 would cross two active faults with the potential for surface rupture, including the active Garlock fault zone at the beginning of the route near the Barren Ridge Switching Station, and the active San Andreas fault zone. Potential ground shaking along this alternative due to seismic activity would range from 0.25g to 0.80g. Liquefaction hazard zones are located in the southern Antelope Valley and San Andreas Rift Zone areas. Mapped landslides and Earthquake-Induced Landslide Hazard Zones are located in the steep ANF in the southern portion of the alternative. Variable areas of slight to very severe erosion potential exist along the proposed alternative. Areas of low to high corrosive soil potential exist along the proposed alternative. Reported groundwater depths along this proposed alternative are on the order of 172 to 295 feet deep in the Antelope Valley area, and 10 to 184 feet deep in the ANF. 1.4 miles of Alternative 2 are located within a potential dam failure inundation zone due to the proximity to Fairmont Reservoir and Bouquet Reservoir.

A summary of the affected environment for Alternative 2 is presented below in Table 28. In general, Alternative 2 would have a shorter crossing of the San Andreas fault zone (and therefore would cross fewer miles of Earthquake Fault Zones) than Alternatives 1 and 3; would cross fewer liquefaction zones than Alternative 3 and cross more liquefaction zones than Alternative 1; would cross fewer potential landslide areas than Alternatives 1 and 3 and cross slightly more potential landslide areas that Alternative 2a; and would have fewer areas of severe to very severe erosion potential than Alternatives 1, 2a and 3.

Alternative 2a (Segments A, B, G and 2a)

The 230 kV double-circuit transmission line in Alternative 2a comprises the preliminary routing Segments A, B, and G, but includes a re-route (Segment 2a) avoiding the unincorporated community of Green Valley. It is 63 miles long and would be very similar to the Proposed Action (Alternative 2), with 56 miles of the same alignment. Alternative 2a would begin at the Barren Ridge Switching Station and run south, paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines. It would travel south from the unincorporated community of Mojave through the Antelope Valley and approximately one mile east of the Antelope Valley California Poppy Reserve before continuing onto NFS lands and ending at the proposed Haskell Canyon Switching Station. The route would remain within designated utility corridors and would parallel existing transmission lines, with the exception of the nearly seven miles that would be routed around the unincorporated community of Green Valley. Segment 2a would create a new utility corridor through the ANF. The re-route would rejoin Segment G south of the unincorporated community of Green Valley before continuing south and ending at the proposed Haskell Canyon Switching Station.

Three-Circuit Tower Mitigation

In areas where there are ROW expansion constraints and where LADWP has existing 230 kV transmission lines, LADWP is proposing to construct three-circuit towers to carry the existing BR-RIN circuit and two new BR-HC circuits. This would avoid various impacts including the acquisition of residential property in the unincorporated communities of Willow Springs (milepost 27.1 to 27.6) and Elizabeth Lake and Green Valley (milepost 44.6 to 46 and milepost 50.8 to 51.7). This mitigation would be utilized in the same areas that were identified for Three-Circuit Tower Mitigation for the Proposed Project, with the exception of approximately five miles through the unincorporated community of Green Valley, which would not utilize this mitigation. These areas are illustrated in 1-7, the Three-Circuit Tower Mitigation Map.

Helicopter Mitigation

Within the ANF where the terrain is steep and access is limited, the USFS would require that the new double-circuit 230 kV structures be constructed by the use of helicopter. Refer to Figure 8-2, Identified Helicopter Mitigation Locations, which illustrates the identified locations for this mitigation. The use of helicopters for the construction of transmission tower structures would eliminate the need for new access roads to structure locations, and would therefore minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites. However, the following site and ground disturbing construction activities would be required to construct the new transmission line within the identified helicopter construction areas: portable landing pads, helicopter fly yards/staging areas, tower structure vegetation clearing, guard structures at major crossings, wire stringing sites, pullouts, and temporary access roads. The estimated sizes of these auxiliary sites (temporary and permanent) and additional construction information is detailed above in the description of the Proposed Action (Alternative 2) and in Appendix C.

Geological Considerations

The Segment 2a portion of Alternative 2a would cross areas of steep terrain along Leona Divide, Grass Mountain and a ridge area north of Portal Canyon where it is predominantly underlain by Mesozoic granitic rock and Precambrian metamorphic rock. Segment 2a would not cross a known active fault. Potential ground shaking along this alternative due to seismic activity would range from 0.60g to 0.80g. No liquefaction hazard zones are mapped along Segment 2a. No landslides are shown on geologic maps reviewed for this evaluation. Earthquake-Induced Landslide Hazard Zones are located on the steep terrain along this alternative. Segment 2a is underlain by areas of severe to very severe erosion potential. Areas of moderate corrosive soil potential exist along the proposed alternative. Groundwater data was not readily available for this alternative in the ANF. No potential dam failure inundation zones are mapped along Segment 2a.

A summary of the affected environment for Alternative 2a is presented below in Table 28. In general, Alternative 2a would have a shorter crossing of the San Andreas fault zone (and therefore would cross fewer miles of Earthquake Fault Zones) than Alternatives 1 and 3; would cross fewer liquefaction zones than Alternative 3 and cross more liquefaction zones than Alternative 1; would cross fewer potential landslide areas than Alternatives 1, 2 and 3; and would cross fewer areas of severe to very severe erosion potential than Alternatives 1 and 3 and cross more potential areas of severe to very severe erosion potential than Alternative 2. In comparing Alternative 2 and 2a, Alternative 2a would cross 0.3 fewer miles of earthquake-induced landslide hazard zones, and would cross 1.9 more miles of severe to very severe erosion potential.

Alternative 3 (Segments A, B, F, and I)

The proposed 230 kV double-circuit transmission line in Alternative 3 comprises preliminary routing Segments A, B, F, and I. It is 76 miles long and would begin at the Barren Ridge Switching Station and run south, paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI lines. It would travel south from the unincorporated community of Mojave through the Antelope Valley and approximately one mile east of the Antelope Valley California Poppy Reserve before continuing southeast past SCE's Antelope Substation. The route would then travel toward the city of Palmdale, parallel to SCE's existing high-voltage transmission lines. It would make a sharp turn to the south to parallel LADWP's existing Victorville – Rinaldi 500 kV and Adelanto – Rinaldi 230 kV transmission lines. This Alternative would then parallel these transmission lines west, crossing two miles of the ANF. The Alternative would then parallel LADWP's 500 kV PDCI line north to the proposed Haskell Canyon Switching Station.

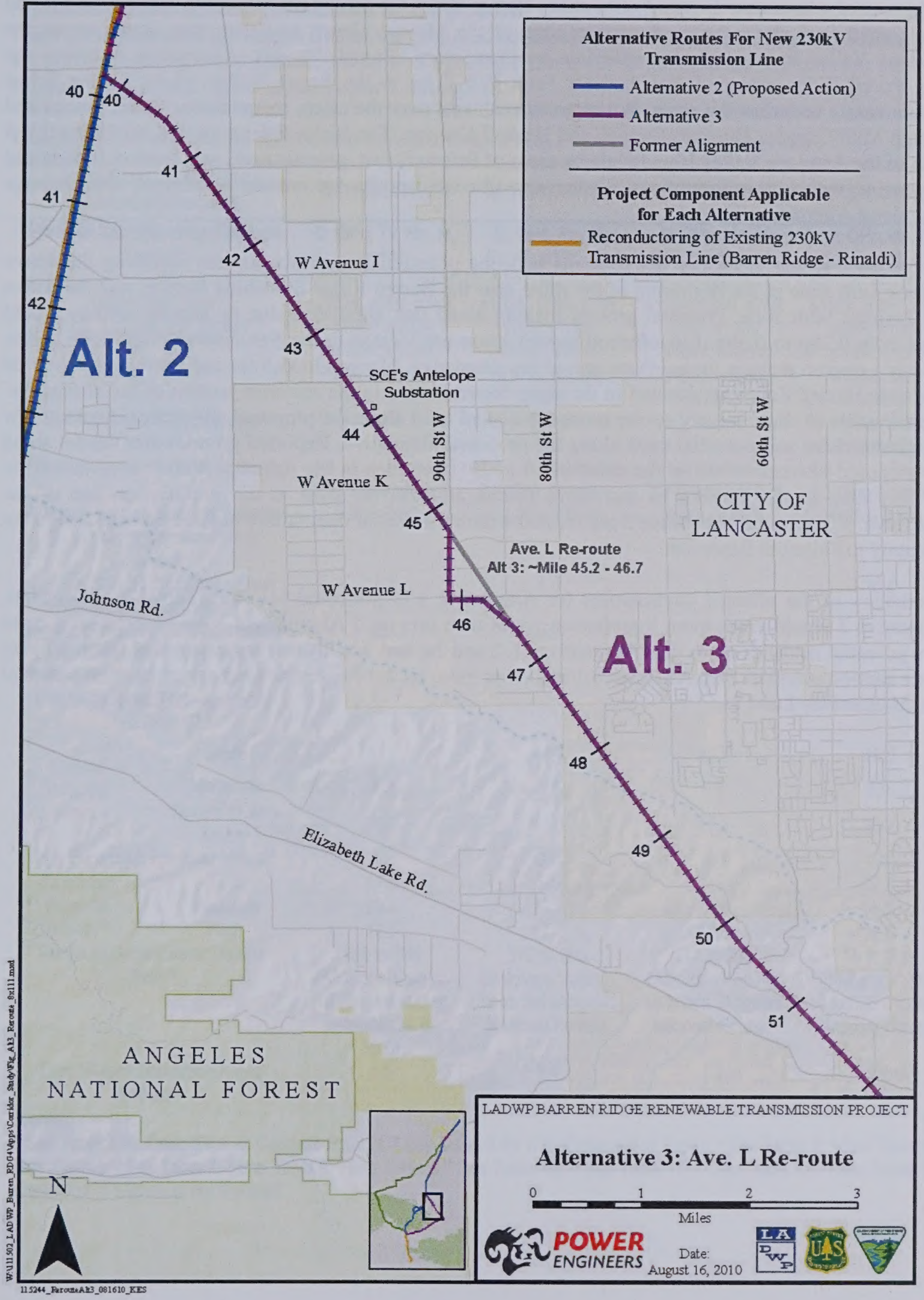
Three-Circuit Tower Mitigation

In areas where there are ROW expansion constraints and where LADWP has existing 230 kV transmission lines, LADWP is proposing to construct three-circuit towers to carry the existing BR-RIN circuit and two new BR-HC circuits. This would avoid various impacts including the acquisition of residential property in the unincorporated communities of Willow Springs (milepost 27.1 to 27.6). Please refer to the small inset map on Figure 1-7.

Avenue L Re-route

To avoid acquisition of private property, a portion of Alternative 3 from mile marker 45.2 to 46.7 was moved to parallel a smaller distribution line south along 90th Street West and then east along West Avenue "L." Refer to Figure 8-3, Avenue L Re-route on Alternative 3.

FIGURE 8-3. AVENUE L RE-ROUTE ON ALTERNATIVE 3


Alternative Routes For New 230kV Transmission Line
Alternative 2 (Proposed Action)
Alternative 3
Former Alignment
Project Component Applicable for Each Alternative
Reconductoring of Existing 230kV Transmission Line (Barren Ridge - Rinaldi)
40
40
41
41
42
42
43
44
45
46
47
48
49
50
51
Alt. 2
Alt. 3
W Avenue I
SCE's Antelope Substation
W Avenue K
W Avenue L
90th St W
80th St W
60th St W
CITY OF LANCASTER
Ave. L Re-route
Alt 3: ~Mile 45.2 - 46.7
Johnson Rd.
Elizabeth Lake Rd.
ANGELES NATIONAL FOREST
N
LADWP BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
Alternative 3: Ave. L Re-route
0
1
2
3
Miles
POWER ENGINEERS
Date: August 16, 2010
LA DWP
W:\11502_LADWP_Barren_RDG4\Apps\Corridor_Study\Fig_Alt3_Reroute_8x11l.mxd
115244_RerouteAlt3_081610_KES

Geological Considerations

The proposed Alternative 3 route begins at the Barren Ridge Switching Station in the Mojave Desert and travels southwest along the northwestern edge of the Mojave Desert and then runs south across the Antelope Valley traversing areas underlain by Quaternary alluvial deposits. Alternative 3 crosses the steep Portal Ridge area and San Andreas Fault Rift Zone in the Leona Valley where Pelona Schist predominantly underlies the route. It runs west/southwest over the steep, mountainous Sierra Pelona and through Mint Canyon, Bouquet Canyon and Haskell Canyon. The Sierra Pelona portion of Alternative 3 south of the Antelope Valley is underlain by areas of Pelona Schist, granitic rock, and Tertiary marine and non-marine sedimentary formations. Quaternary alluvial deposits are present in canyons and drainage areas along Alternative 3.

Alternative 3 would cross two active faults with the potential for surface rupture including the active Garlock fault zone at the beginning of the route near the Barren Ridge Switching Station, and the active San Andreas fault zone. Potential ground shaking along this alternative due to seismic activity would range from 0.25g to 0.80g. Liquefaction hazard zones are located in the San Andreas Rift Zone and in low-lying canyon areas in the southern part of the alternative. Mapped landslides and Earthquake-Induced Landslide Hazard Zones are located in the steep Sierra Pelona in the southern portion of the alternative. Variable areas of slight to very severe erosion potential exist along the proposed alternative. Areas of low to high corrosive soil potential exist along the proposed alternative. Reported groundwater depths along this proposed alternative are on the order of 10 to 295 feet deep in the Antelope Valley area, and 10 to 326 feet deep in the portions of the Sierra Pelona and canyon areas in the southern portion of the alternative. 1.7 miles of Alternative 3 are located within a potential dam failure inundation zone due to the proximity to Fairmont Reservoir.

A summary of the affected environment for Alternative 3 is presented below in Table 28. In general, Alternative 3 would cross more liquefaction zones than proposed Alternatives 1 2 and 2a; would cross more potential landslide areas than Alternatives 1, 2 and 2a; and would cross fewer areas of severe to very severe erosion potential than Alternative 1 and cross more areas of severe to very severe erosion potential than Alternatives 2 and 2a.

8.2.2. Summary Description of Action Alternatives

A summary of the affected environment for the proposed action alternatives is shown below in Table 28. Table 28 is presented for comparison of the proposed action alternatives and was created by summarizing the potential geologic and seismic hazards and geologic resources in the affected environment presented in Section 5.0 of this report and in Tables 1 through 13.

TABLE 28 – SUMMARY OF AFFECTED ENVIRONMENT FOR PROPOSED ALTERNATIVES

POTENTIAL GEOLOGIC HAZARD/RESOURCE		ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 2a	ALTERNATIVE 3
Principal Geologic Units (Geologic Symbol)[1]		Q, QPc, Tv, Mc, M, grMz	Q, QPc, Mc, M, Ep, O, grMz, sch, pC	Q, QPc, Mc, M, Ep, O, grMz, sch, pC	Q, QPc, Mc, M, grMz, gr-m, sch, pC
USDA Soil Types (U.S. General Soil Types)[2]		s1024, s766, s769, s1009, s1034, s1054, s1055, s909	s1024, s766, s769, s768, s1009, s1047, s1054, s1055, s1056, s1057	s1024, s766, s769, s768, s1009, s1047, s1054, s1055, s1056, s1057	s1024, s766, s769, s768, s1009, s1054, s1055, s1057, s909, s1059
Distinctive Geologic Features[3]		None	None	None	0.4 miles of white tuff marker beds
Earthquake Fault Zones (miles)[4]		1.4 (Garlock) 1.5 (San Andreas)	1.4 (Garlock) 0.9 (San Andreas)	1.4 (Garlock) 0.9 (San Andreas)	1.4 (Garlock) 1.5 (San Andreas)
Range of Ground Shaking Potential (% of the acceleration due to gravity)[5]		0.30 – 0.60 g	0.25 – 0.80 g	0.25 – 0.80 g	0.25 – 0.80 g
Liquefaction Hazard Zones From Available Data (miles)[6]		1.2	1.9	1.9	10.4
Potential Mapped Landslide Areas From Available Data (miles)[7]		6.6	0.2	0.2	4.1
Potential Earthquake-Induced Landslide Areas From Available Data (miles)[7]		5.6	2.6	2.3	18.8
Erosion Potential (miles)[8]	Slight	52.2	43.7	42.7	48.0
	Moderate	4.9	1.9	2.5	7.0
	Severe to Very Severe	26.0	15.3	17.2	20.2
High Expansion Potential (miles)[9]		1.8	0.0	0.0	0.0
Corrosive Potential (miles)[10]	Low	17.5	5.5	5.5	12.8
	Moderate	29.4	23.1	23.6	36.2
	High	18.3	17.4	17.4	22.2
Range of Groundwater Depths (feet)[11]		138 to 336 (Antelope Valley); 10 (Segment D at milepost 34.8-35.0)	172 to 295 (Antelope Valley); 10 to 184 (Angeles National Forest)	172 to 295 (Antelope Valley); 10 to 184 (Angeles National Forest)	10 to 295 (Antelope Valley); 10 to 326 (Angeles National Forest)
Dam Failure Inundation Areas (miles)[12]		1.5	1.4	1.4	1.7

Notes:

[1] See Table 1 for Description of Geologic Symbol; [2] See Table 3 for U.S. General Soil Types; [3] See Table 4; [4] See Table 5; [5] See Table 6; [6] See Table 7; [7] See Table 8; [8] See Table 9; [9] See Table 10; [10] See Table 11; [11] See Table 12; [12] See Table 13;* Centerline of alignment not finalized.

8.2.3. No Action Alternative

Under the No Action Alternative, the construction of a new 230 kV transmission line, the addition of a new circuit on existing structures from Haskell Canyon to the Castaic Power Plant, the reconductoring of the existing BR-RIN transmission line, the construction of a new Haskell Canyon Switching Station, and the expansion of the existing Barren Ridge Switching Station would not occur. LADWP currently maintains an estimated 147 miles of existing access roads in the Project area, 97 of which are located within the ANF. Current, on-going operation and maintenance activates for existing facilities in the Project area would continue. The EIS/EIR must address the resulting environmental effects from taking no action and compare them to the effects of permitting the Proposed Action or an Alternative to the Proposed Action.

8.3 IMPACT ASSESSMENT—ROUTING ALTERNATIVES

A comparison summary of the initial impacts affecting the proposed alternatives is presented in the following section. The proposed routing alternatives were evaluated by adding the miles of impacts in the various geologic resource and potential geologic/seismic hazard categories for the Project segments that comprise the alternatives. Alternative 1 was evaluated by adding the impacts for Segments A, C and D; Alternative 2a was evaluated by adding the impacts for Segments A, B, G, and 2a; and Alternative 3 was evaluated by adding the impacts for Segments A, B, F and I.

8.4 IMPACT RESULTS—ROUTING ALTERNATIVES

A comparison summary of the initial impacts affecting the proposed routing Alternatives 1, 2, 2a and 3 is presented in Tables 29 through 39. The impact of the No Action alternative is also presented in the following tables. A discussion of the results of the impact assessment for the proposed routing alternatives follows each table.

TABLE 29 – SUMMARY OF THE PROPOSED ALTERNATIVE POTENTIAL INITIAL IMPACTS TO SOILS[1]

PROPOSED ALTERNATIVE	TOTAL LENGTH OF ALTERNATIVE (MILES)	MILES OF LOW SENSITIVITY/LOW IMPACT LEVEL AREAS TRAVERSED (PERCENT OF TOTAL LENGTH)	MILES OF MODERATE SENSITIVITY/ MODERATE IMPACT LEVEL AREAS TRAVERSED (PERCENT OF TOTAL LENGTH)	MILES OF HIGH SENSITIVITY/HIGH IMPACT LEVEL AREAS TRAVERSED (PERCENT OF TOTAL LENGTH)
Alternative 1	83.1	52.2 (62.8%)	4.9 (5.9%)	26.0 (31.3%)
Alternative 2	60.7	43.7 (71.8%)	1.9 (3.1%)	15.3 (25.1%)
Alternative 2a	62.5	42.7 (68.4%)	2.5 (4.0%)	17.2 (27.6%)
Alternative 3	75.5	48.0 (63.8%)	7.0 (9.3%)	20.2 (26.9%)
No Action	0.0	0.0	0.0	0.0

Notes:

[1] Data from USDA 2008d.

Table 29 shows that Alternative 2 would have fewer miles (and lower percent of total length) of high impact to highly sensitive soils than Alternatives 1, 2a and 3. Alternative 1 would have more miles of high impact (and higher percent of total length) than the other proposed alternatives.

TABLE 30 – SUMMARY OF THE PROPOSED ALTERNATIVE POTENTIAL INITIAL IMPACTS TO DISTINCTIVE GEOLOGIC FEATURES[1]

PROPOSED ALTERNATIVE	TOTAL LENGTH OF ALTERNATIVE (MILES)	LOW IMPACT LEVEL AREAS TRAVERSED (MILES)	MODERATE IMPACT LEVEL AREAS TRAVERSED (MILES)	HIGH IMPACT LEVEL AREAS TRAVERSED (MILES)
Alternative 1	83.1	51.9	31.2	0.0
Alternative 2	60.7	44.2	16.7	0.0
Alternative 2a	62.5	44.2	18.2	0.0
Alternative 3	75.5	49.6	23.7	0.4
No Action	0.0	0.0	0.0	0.0

Notes:

[1] Dibblee, 1997c, 1997f, 2002b. field observations.

Table 30 shows that Alternative 3 would have 0.4 mile of high impact to distinctive geologic features, while Alternatives 1, 2 and 2a would not traverse areas of high impact to distinctive geologic features. Due to its shorter total length, Alternative 2 would have fewer miles of moderate level impact to distinctive geologic features than Alternatives 1, 2a and 3.

TABLE 31 – SUMMARY OF THE PROPOSED ALTERNATIVE POTENTIAL INITIAL IMPACTS DUE TO EARTHQUAKE FAULT ZONES

PROPOSED ALTERNATIVE	TOTAL LENGTH OF ALTERNATIVE (MILES)	HIGH IMPACT LEVEL EARTHQUAKE FAULT ZONES TRAVERSED (MILES)[1]
Alternative 1	83.1	2.9
Alternative 2	60.7	2.3
Alternative 2a	62.5	2.3
Alternative 3	75.5	2.9
No Action	0.0	None

Notes:

[1] Hart and Bryant, 1997. (formerly Alquist-Priolo Special Studies Zones)

Table 31 shows that Alternatives 2 and 2a would traverse fewer miles of high impact earthquake fault zones than both Alternatives 1 and 3. This is due in part to the manner in which the proposed alternatives traverse the San Andreas fault zone, wherein Alternatives 2 and 2a cross perpendicular to the fault zone and Alternatives 1 and 3 traverse diagonally.

TABLE 32 – SUMMARY OF THE PROPOSED ALTERNATIVE POTENTIAL INITIAL IMPACTS DUE TO GROUND SHAKING

PROPOSED ALTERNATIVE	APPROXIMATE GROUND SHAKING POTENTIAL[1] (% OF THE ACCELERATION DUE TO GRAVITY, g)	TOTAL LENGTH OF ALTERNATIVE (MILES)	LOW IMPACT LEVEL AREAS TRAVERSED (MILES)	MODERATE IMPACT LEVEL AREAS TRAVERSED (MILES)	HIGH IMPACT LEVEL AREAS TRAVERSED (MILES)
Alternative 1	0.30 – 0.60	83.1	0.0	69.7	13.4
Alternative 2	0.25 – 0.80	60.7	2.7	48.2	10.0
Alternative 2a	0.25 – 0.80	62.5	2.7	43.4	16.3
Alternative 3	0.25 – 0.80	75.5	2.7	55.9	16.6
No Action	N/A	0.0	0.0	0.0	0.0

Notes:

[1] USGS (2002rev) data; and USGS (2008) Ground Motion Calculator (for Switching Stations).

Table 32 shows that Alternative 2 would traverse fewer miles of high impact ground shaking areas than Alternatives 1, 2a and 3. This is due in part to the manner in which the proposed alternatives traverse the ground shaking level contours in the southern part of the Project study area shown on Figure 6. The ground shaking level contours shown on Figure 6 are roughly parallel to the alignment of the San Andreas fault zone, and higher levels of ground shaking occur closer to the fault zone. Since Alternatives 2 and 2a cross roughly perpendicular to the San Andreas fault zone, they depart from the high ground shaking areas in a shorter distance and have fewer miles of high impact areas. Conversely, Alternatives 1 and 3 traverse diagonally to the San Andreas fault zone, and have a longer distance of departure from the high impact areas. Alternative 2a has more miles of high impact areas traversed than Alternative 2 due to the alignment of Segment 2a, which also has a roughly diagonal orientation to the San Andreas fault zone.

TABLE 33 – SUMMARY OF THE PROPOSED ALTERNATIVE POTENTIAL INITIAL IMPACTS DUE TO LIQUEFACTION HAZARD ZONES

PROPOSED ALTERNATIVE	TOTAL LENGTH OF ALTERNATIVE (MILES)	AVAILABLE DATA (MILES)[1]	HIGH IMPACT LEVEL LIQUEFACTION HAZARD ZONES TRAVERSED (MILES)[1]	RATIO OF LIQUEFACTION ZONES TO AVAILABLE DATA
Alternative 1	83.1	8.8	1.2	13.6%
Alternative 2	60.7	16.2	1.9	11.7%
Alternative 2a	62.5	18.6	1.9	10.2%
Alternative 3	75.5	41.7	10.4	24.9%
No Action	0.0	0.0	None	0.0%

Notes:

[1] Data from CGS Seismic Hazards Mapping Program for available quadrangles in the study area (some quadrangles and data not available

Table 33 shows that Alternative 1 would traverse fewer miles of high impact liquefaction hazard zones than Alternatives 2, 2a and 3. However, Alternative 1 also has fewer miles of available liquefaction zone data than the other alternatives, and when comparing the ratio of miles of liquefaction zones to the miles of available data along the proposed alternatives, the data show that Alternative 2a would have a lower ratio percentage of liquefaction zones than the other proposed alternatives. The data show that Alternative 2 would have a lower ratio percentage than Alternatives 1 and 3. Alternative 3 would traverse more miles and has a higher ratio percentage of liquefaction zones than the other proposed alternatives.

TABLE 34 – SUMMARY OF THE PROPOSED ALTERNATIVE POTENTIAL INITIAL IMPACTS DUE TO MAPPED LANDSLIDES

PROPOSED ALTERNATIVE	TOTAL LENGTH OF ALTERNATIVE (MILES)	AVAILABLE DATA (MILES)[1]	HIGH IMPACT LEVEL LANDSLIDE AREAS TRAVERSED (MILES)[1]	RATIO OF MAPPED LANDSLIDES TO AVAILABLE DATA
Alternative 1	83.1	26.0	6.6	25.4%
Alternative 2	60.7	27.4	0.2	0.7%
Alternative 2a	62.5	28.9	0.2	0.7%
Alternative 3	75.5	35.5	4.1	11.5%
No Action	0.0	0.0	None	0.0%

Notes:

[1] Data from available geologic maps by Dibblee; and from CGS Seismic Hazards Zones Reports for available quadrangles in the study area (some quadrangles and data not available).

Table 34 shows that Alternatives 2 and 2a would traverse fewer miles of high impact mapped landslide areas than Alternatives 1 and 3. In addition, when comparing the ratio of miles of mapped landslide areas to the miles of available data along the proposed alternatives, the data show that Alternatives 2 and 2a would have a lower ratio percentage of mapped landslide areas than the other proposed alternatives. The data show that Alternative 1 would traverse more miles and has a higher ratio percentage of mapped landslide areas than the other proposed alternatives.

TABLE 35 – SUMMARY OF THE PROPOSED ALTERNATIVE POTENTIAL INITIAL IMPACTS DUE TO EARTHQUAKE-INDUCED LANDSLIDE HAZARD ZONES

PROPOSED ALTERNATIVE	TOTAL LENGTH OF ALTERNATIVE (MILES)	AVAILABLE DATA (MILES)1	HIGH IMPACT LEVEL EARTHQUAKE-INDUCED LANDSLIDE AREAS TRAVERSED (MILES)[1]	RATIO OF EARTHQUAKE-INDUCED LANDSLIDE AREAS TO AVAILABLE DATA
Alternative 1	83.1	8.8	5.6	63.6%
Alternative 2	60.7	16.2	2.6	16.0%
Alternative 2a	62.5	18.6	2.3	12.4%
Alternative 3	75.5	41.7	18.8	45.1%
No Action	0.0	0.0	None	0.0%

Notes:

[1] Data from CGS Seismic Hazards Zones Reports for available quadrangles in the study area (some quadrangles and data not available).

Table 35 shows that Alternative 2a would traverse fewer miles of high impact earthquake-induced landslide hazard zones than Alternatives 1, 2 and 3. In addition, when comparing the ratio of miles of earthquake-induced landslide hazard zones to the miles of available data along the proposed alternatives, the data show that Alternative 2a would have a lower ratio percentage of earthquake-induced landslide hazard zones than the other proposed alternatives. The data show that Alternative 3 would traverse more miles of earthquake-induced landslide hazard zones than the other proposed alternatives. When comparing the ratio of miles of earthquake-induced landslide hazard zones to the miles of available data, the data show that Alternative 1 has a higher ratio percentage of earthquake-induced landslide hazard zones than the other proposed alternatives.

TABLE 36 – SUMMARY OF THE PROPOSED ALTERNATIVE POTENTIAL INITIAL IMPACTS DUE TO SOIL EROSION[1]

PROPOSED ALTERNATIVE	TOTAL LENGTH OF ALTERNATIVE (MILES)	MILES OF LOW IMPACT LEVEL AREAS TRAVERSED (PERCENT OF TOTAL LENGTH)	MILES OF MODERATE IMPACT LEVEL AREAS TRAVERSED (PERCENT OF TOTAL LENGTH)	MILES OF HIGH IMPACT LEVEL AREAS TRAVERSED (PERCENT OF TOTAL LENGTH)
Alternative 1	83.1	52.2 (62.8%)	4.9 (5.9%)	26.0 (31.3%)
Alternative 2	60.7	43.7 (71.8%)	1.9 (3.1%)	15.3 (25.1%)
Alternative 2a	62.5	42.7 (68.4%)	2.5 (4.0%)	17.2 (27.6%)
Alternative 3	75.5	48.0 (63.8%)	7.0 (9.3%)	20.2 (26.9%)
No Action	0.0	0.0	0.0	0.0

Notes:

[1] Data from USDA(2008d).

Table 36 shows that Alternative 2 would traverse fewer miles of high impact soil erosion areas than Alternatives 1, 2a and 3. In addition, when comparing the percentage of high impact areas to the total length of the alternatives, the data further show that Alternative 2 would have a lower percentage of high impact soil erosion areas than the other proposed alternatives. The data show that Alternative 1 would traverse more miles and have a higher percentage of high impact soil erosion areas than the other proposed alternatives.

TABLE 37 – SUMMARY OF THE PROPOSED ALTERNATIVE POTENTIAL INITIAL IMPACTS DUE TO CORROSIVE SOILS[1]

PROPOSED ALTERNATIVE	TOTAL LENGTH OF ALTERNATIVE (MILES)	AREAS WITH AVAILABLE DATA (MILES)	LOW IMPACT CORROSIVE SOIL POTENTIAL (MILES)	MODERATE IMPACT CORROSIVE SOIL POTENTIAL (MILES)	HIGH IMPACT CORROSIVE SOIL POTENTIAL (MILES)
Alternative 1	83.1	65.1	17.5	29.3	18.3
Alternative 2	60.7	45.9	5.5	23.0	17.4
Alternative 2a	62.5	46.5	5.5	23.6	17.4
Alternative 3	75.5	71.1	12.8	36.1	22.2
No Action	0.0	0.0	0.0	0.0	0.0

Notes:

[1] Data from USDA (2007b, and 2008a, b, c and d). When multiple soils occur in a single 1/10th mile, the higher potential impact corrosive value is considered.

Table 37 shows that Alternatives 2 and 2a would traverse fewer miles of high impact corrosive soil areas than Alternatives 1 and 3. This is partly due to the shorter length of Alternatives 2 and 2a and the less availability of data. The data show that Alternative 3 would traverse more miles of high impact corrosive soil areas than the other proposed alternatives. This is partly due to the longer distance of Alternative 3, relative to Alternatives 2 and 2a, and the availability of more data for Alternative 3.

TABLE 38 – SUMMARY OF THE PROPOSED ALTERNATIVE POTENTIAL INITIAL IMPACTS DUE TO GROUNDWATER[1]

PROPOSED ALTERNATIVE	TOTAL LENGTH OF ALTERNATIVE (MILES)	AREAS WITH AVAILABLE DATA (MILES)	LOW IMPACT LEVEL AREAS TRAVERSED (MILES)	MODERATE IMPACT LEVEL AREAS TRAVERSED (MILES)	HIGH IMPACT LEVEL AREAS TRAVERSED (MILES)
Alternative 1	83.1	0.6	0.4	0.0	0.2
Alternative 2	60.7	4.1	2.7	0.1	1.3
Alternative 2a	62.5	4.1	2.7	0.1	1.3
Alternative 3	75.5	8.3	2.9	0.0	5.4
No Action	0.0	0.0	0.0	0.0	0.0

Notes:

[1] CDWR, 2008; CGS Seismic Hazards Evaluation Reports.

Table 38 shows that Alternative 1 would traverse fewer miles of high impact groundwater areas than Alternatives 2, 2a and 3. However, Alternative 1 has much less available data than the other proposed alternatives. The data show that Alternative 3 would traverse more miles of high impact groundwater areas than Alternatives 1, 2 and 2a. However, Alternative 3 has much more available data than the other proposed alternatives.

TABLE 39 – SUMMARY OF THE PROPOSED ALTERNATIVE POTENTIAL INITIAL IMPACTS DUE TO DAM FAILURE INUNDATION

PROPOSED ALTERNATIVE	TOTAL LENGTH OF ALTERNATIVE (MILES)	HIGH IMPACT LEVEL INUNDATION AREAS TRAVERSED (MILES)[1]
Alternative 1	83.1	1.5
Alternative 2	60.7	1.4
Alternative 2a	62.5	1.4
Alternative 3	75.5	0.9
No Action	0.0	None

Notes:

[1] Data from County of Los Angeles, 1990; Kern County, 2005; Kern County, 2007.

Table 39 shows that Alternative 3 would traverse fewer miles of high impact level dam failure inundation areas than Alternatives 1, 2, and 2a. The difference in impact areas is due to the geographic extent of the Alternatives relative to mapped dam failure inundation zones.

8.5 NO ACTION ALTERNATIVE

Selection of the No Action Alternative would mean that the BRRTP, as proposed, would not be implemented. As such, potential geologic resources in the affected environment, including highly erosion-sensitive soils and distinctive geologic features, would not be impacted by construction of the proposed Project. However, in the absence of the proposed Project, the purposes and need for the power transmission capabilities that would be met by the Project would not be achieved.

Environmental conditions in the Project study area are expected to naturally change or evolve over time. Therefore, independent of the proposed BRRTP, the potential geologic resources in the Project area would not remain static. If the No Action Alternative is selected, the potential geologic resources preserved in the natural environment by not implementing the Project may remain unchanged over a short geologic time period. However, the potential geologic resources would eventually be affected by long-term, natural geologic processes, independent of the potential impacts associated with the proposed BRRTP.

8.6 CUMULATIVE IMPACTS

8.6.1. Introduction

Cumulative effects are those effects that result from incremental impacts of the proposed action when added to other past, present and reasonably foreseeable future actions. Analysis of cumulative effects places project-specific impacts into a broader context that takes into account the full range of impacts of actions taking place over a given space and time. Cumulative effects may be considered a significant impact to the environment, as degradation of important resources may result from the combined, incremental effects of actions. Cumulative effects may result from individually minor or insignificant actions, which collectively may be considered significant as they accumulate over time and space from one or more actions or sources.

8.6.2. Impacting Factors

Cumulative impacts for geologic resources in the Project study area apply to highly erosion-sensitive soils and distinctive geologic features that may be impacted by the BRRTP. Impacting factors that may affect highly erosion-sensitive soils and highly distinctive geologic features could occur during grading and construction of components of the proposed BRRTP. Erosion of highly sensitive soils could also occur during long-term operation of the BRRTP.

Cumulative impacts related to the major geologic and seismic hazards that may affect the Project apply to surface fault rupture, seismic ground shaking, liquefaction, landslides, soil erosion, settlement, expansive soils, corrosive soils, and groundwater. The impacting factors related to potential geologic and seismic hazards occur due to conditions that may affect the proposed Project from the natural geologic environment.

8.6.3. Impact Area

The geographic areas for considering cumulative impacts related to geologic resources and potential geologic and seismic hazards are the proposed Project study corridors, including the expanded Barren Ridge and proposed new Haskell Canyon switching station locations. This is because geologic conditions and potential resources occur at site-specific locales, and are generally not affected by activities occurring outside the corridors.

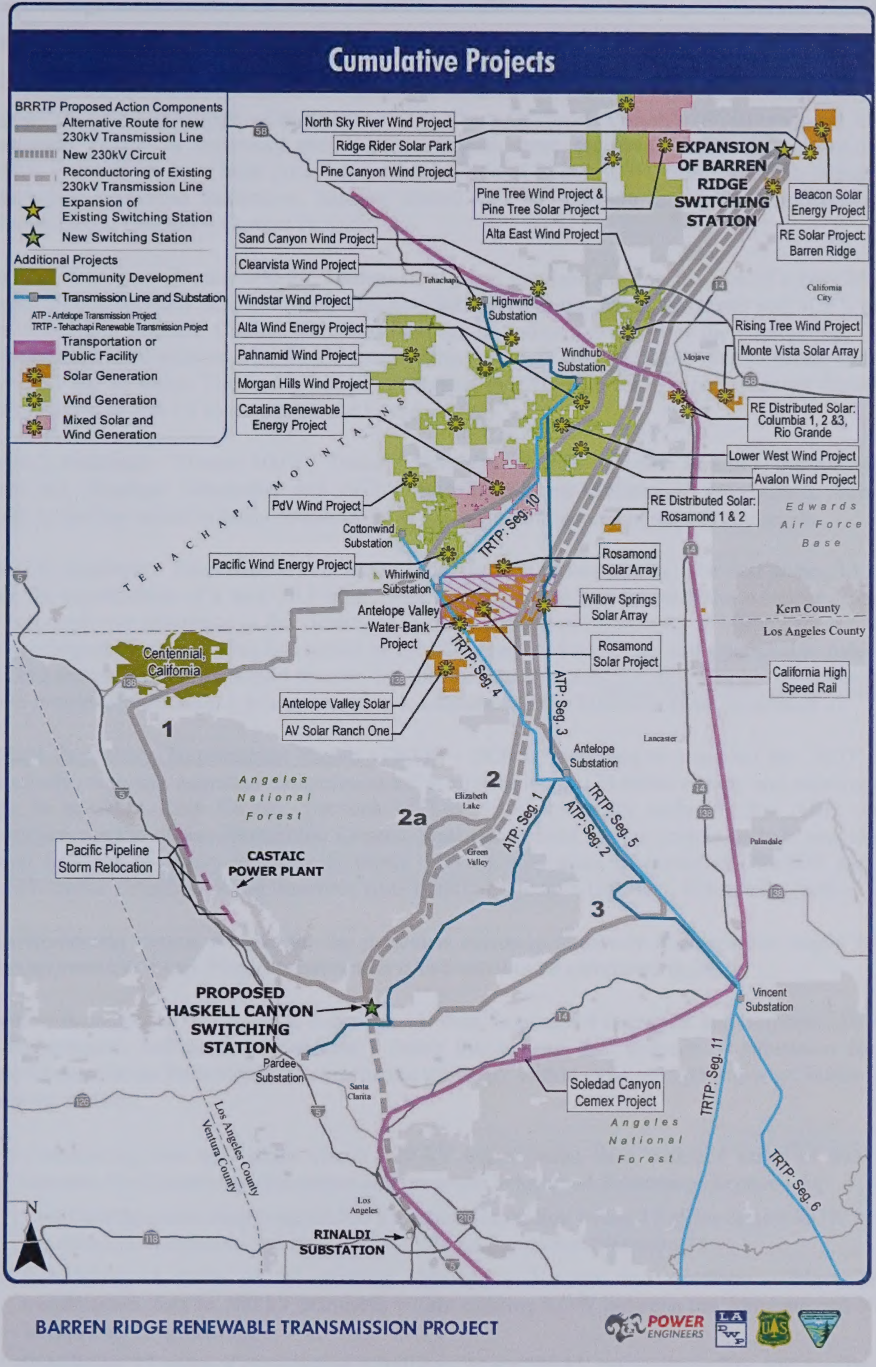
8.6.4. Cumulative Projects List – Major Present and Reasonably Foreseeable Future Actions

The cumulative projects list is used to provide a general context for the cumulative effects. This list includes present and reasonably foreseeable future actions in the Project vicinity that have the potential to combine with the Proposed Action or Alternatives. While a distinct impact area for cumulative impacts and specific present and reasonably foreseeable actions is determined individually for each resource area, collectively, the projects listed below represent the major known and anticipated activities that may occur in the general Project area. The Cumulative Projects Map (Figure 8-4) illustrates the location of energy infrastructure and other major projects in reference to the Proposed Action and Alternatives.

As the project list comprises projects in various stages of planning and development, it is likely that some of these projects would be completed as currently proposed while others would not. To be conservative, the cumulative analysis assumes that all projects listed would be built and in operation during the operating lifetime of the proposed Project. The list was developed in consultation with the following agencies:

- USFS – Angeles National Forest (ANF)
- BLM – Ridgecrest Field Office
- BLM – Palm Springs Field Office
- United States Air Force – Edwards Air Force Base
- Kern County – Planning Department
- Los Angeles County – Department of Regional Planning
- City of California City
- City of Lancaster
- City of Palmdale
- City of Santa Clarita
- City of Los Angeles
- City of San Fernando
- LADWP

FIGURE 8-4. CUMULATIVE PROJECTS


Cumulative Projects
BRRTP Proposed Action Components
Alternative Route for new 230kV Transmission Line
New 230kV Circuit
Reconductoring of Existing 230kV Transmission Line
Expansion of Existing Switching Station
New Switching Station
Additional Projects
Community Development
Transmission Line and Substation
ATP - Antelope Transmission Project
TRTP - Tehachapi Renewable Transmission Project
Transportation or Public Facility
Solar Generation
Wind Generation
Mixed Solar and Wind Generation
North Sky River Wind Project
Ridge Rider Solar Park
Pine Canyon Wind Project
Pine Tree Wind Project & Pine Tree Solar Project
EXPANSION OF BARREN RIDGE SWITCHING STATION
Beacon Solar Energy Project
RE Solar Project: Barren Ridge
Alta East Wind Project
Sand Canyon Wind Project
Clearvista Wind Project
Windstar Wind Project
Alta Wind Energy Project
Pahnamid Wind Project
Morgan Hills Wind Project
Catalina Renewable Energy Project
Tehachapi
Highwind Substation
Windhub Substation
Mojave
California City
Rising Tree Wind Project
Monte Vista Solar Array
RE Distributed Solar: Columbia 1, 2 &3, Rio Grande
Lower West Wind Project
Avalon Wind Project
RE Distributed Solar: Rosamond 1 & 2
Edwards Air Force Base
T E H A C H A P I M O U N T A I N S
PdV Wind Project
Cottonwind Substation
Pacific Wind Energy Project
Whirlwind Substation
TRTP: Seg. 10
Rosamond Solar Array
Willow Springs Solar Array
Antelope Valley Water Bank Project
Kern County
Los Angeles County
Rosamond Solar Project
California High Speed Rail
Centennial, California
TRTP: Seg. 4
ATP: Seg. 3
Antelope Valley Solar
AV Solar Ranch One
1
Lancaster
Antelope Substation
Angeles National Forest
2
2a
Elizabeth Lake
ATP: Seg. 1
ATP: Seg. 2
TRTP: Seg. 5
Green Valley
Palmdale
Pacific Pipeline Storm Relocation
CASTAIC POWER PLANT
3
PROPOSED HASKELL CANYON SWITCHING STATION
Vincent Substation
Pardee Substation
Santa Clarita
Soledad Canyon Cemex Project
TRTP: Seg. 11
Angeles National Forest
Los Angeles County
Ventura County
TRTP: Seg. 6
N
Los Angeles
RINALDI SUBSTATION
58
14
138
5
126
118
210
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS
LA DWP

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Energy Infrastructure Projects

Transmission Projects

Antelope Transmission Project – Construction of Southern California Edison's (SCE) proposed Antelope Transmission Project is underway and is proceeding in three sequential segments. Construction of Segments 1, 2 and 3A have been completed. Construction of Segment 3B, from Windhub Substation to and including Highwind Substation, has not started and no schedule has been developed by SCE (California Public Utilities – Current Projects).

Segment 1, Antelope – Pardee 500 kV Transmission Line, involved the construction of a new 25.6-mile transmission line between SCE's existing Antelope Substation in the city of Lancaster and SCE's existing Pardee Substation in Santa Clarita, with modifications to and/or expansion of the substations. The line was constructed in an existing SCE 66 kV transmission line right-of-way (ROW) for 23 miles, and within a new ROW for 18 miles. The line is initially energized to 220 kV to serve existing energy demand and can be upgraded to 500 kV to accommodate future needs.

Segment 2, Antelope – Vincent 500 kV Transmission Line, consists of a new 17.8 mile transmission line between the Antelope Substation and SCE's existing Vincent Substation near Acton. Similar to Segment 1, the line would initially be energized at 220 kV and upgraded to meet future needs.

Segment 3, Antelope – Tehachapi Transmission Line, consists of two phases. The first phase, 3A, would involve the construction of a new 26.1-mile 500 kV transmission line between the Antelope Substation and a proposed new substation in the vicinity of the unincorporated community of Mojave (Substation 1). Similar to Segments 1 and 2, this line would be initially energized at 220 kV and upgraded to meet future needs. The second phase, 3B, would involve the construction of a new 9.4-mile 220 kV transmission line from the proposed Substation 1 to a proposed new substation in the Monolith area (Substation 2).

Tehachapi Renewable Transmission Project (TRTP) – SCE is proposing to construct the TRTP, which would involve new and upgraded transmission infrastructure along 173 miles of new and existing rights-of-way, in southern Kern County, portions of Los Angeles County including the ANF, and the southwestern portion of San Bernardino County. Stated objectives for the project include providing the electrical facilities necessary to integrate levels of wind generation in excess of 700 MW and up to 4,500 MW in the Tehachapi Wind Resource Area (California Public Utilities – Current Projects).

The environmental review process for the project is currently underway. Construction began in April 2010 on approved sections. Project construction is estimated to be completed in 2015.

The project is composed of Segments 4 through 11, with Segments 4 through 8 and Segments 10 and 11 being transmission facilities, and Segment 9 being the addition and upgrade of substation facilities. Proposed transmission lines would be constructed primarily within existing rights-of-way. Major project components include:

- Constructing two new single-circuit 220 kV transmission lines within 4 miles of new ROW between the Cottonwood Substation and proposed Whirlwind Substation (Segment 4);
- Constructing a new single-circuit 500 kV transmission line within 16 miles of new ROW between the Antelope Substation and proposed Whirlwind Substation (Segment 4);
- Rebuilding 18 miles of the existing Antelope – Vincent and Antelope – Mesa 220 kV transmission lines to 500 kV standards within existing ROW between the Antelope and Vincent Substations (Segment 5);
- Rebuilding 27 miles of the existing Antelope – Mesa 220 kV transmission line and 5 miles of the existing Rio Hondo – Vincent 220 kV transmission line to 500 kV standards between the Vincent Substation and the southern boundary of the ANF (Segment 6);

- Rebuilding 16 miles of the existing Antelope – Mesa 220 kV transmission line to 500 kV standards between the southern boundary of the ANF and Mesa Substation (Segment 7);
- Rebuilding 33 miles of the existing Chino – Mesa 200 kV transmission line to 500 kV standards between a point 2 miles east of the Mesa Substation and the Mira Loma Substation (Segment 8);
- Rebuilding 7 miles of the existing Chino – Mira Loma No. 1 220 kV transmission line from single-circuit to double-circuit structures (Segment 8);
- Constructing a new 500/220 kV Whirlwind Substation 4 to 5 miles south of the Cottonwood Substation (Segment 9);
- Upgrading the existing Antelope, Vincent, Mesa, Gould, and Mira Loma Substations to accommodate new transmission line construction and system compensation elements (Segment 9);
- Constructing a new single-circuit 500 kV transmission line within 17 miles of new ROW between the Windhub Substation and proposed Whirlwind Substation (Segment 10);
- Rebuilding 19 miles of existing 220 kV transmission line to 500 kV standards in existing ROW between the Vincent and Gould Substations (Segment 11);
- Adding a new 220 kV circuit between the Mesa and Gould Substations on the vacant side of the existing Eagle Rock – Mesa 220 kV transmission line double circuit structures (Segment 11); and
- Installing associated telecommunications infrastructure.

Generation Projects

Numerous wind and solar generation projects are in various stages of planning and development within the Project vicinity. Projects considered include the projects currently undergoing environmental review or projects that have been recently approved. Table 8a below summarizes the major known projects and their current status as of April 2011 (County of Kern Environmental Documents and AV Solar Ranch One).

TABLE 8A. PROPOSED GENERATION PROJECTS IN THE PROJECT VICINITY

Project Name	Project Type	Approximate Generation	Area (acres)	Location	Status
Alta East Wind Project	Wind	300 MW	3,660	Kern County	Application to Kern County deemed complete on Aug. 2010
Alta Wind Energy Center: Alta-Oak Creek Mojave Project	Wind Turbine	800 MW	9,175	Kern County	Approved by Kern County Dec. 2009
Antelope Valley Solar Project	Solar Photovoltaic	650 MW	5,698	Kern County	Draft EIR released April 2011
AV Solar Ranch One	Solar Photovoltaic	230 MW	21,000	Los Angeles County	Final EIR completed Aug. 2010
Avalon Wind Project	Wind	255 MW	10,000	Kern County	Application to Kern County deemed complete on July 2010
Beacon Solar Energy Project	Concentrated Solar	250 MW	2,012	Kern County	Application for Certification approved Aug. 2010
Catalina Renewable Energy Project	Wind Turbine & Solar Photovoltaic	350 MW	7,472	Kern County	Notice of Preparation for a Draft EIR filed Feb. 2011
Clearvista Wind Project	Wind Turbine	40 MW	226	Kern County	Draft EIR released Nov. 2010
Edwards Air Force Base Solar Project	Solar	500 MW	3,288	Kern County	Lease execution anticipated 2012

Project Name	Project Type	Approximate Generation	Area (acres)	Location	Status
Lower West Wind Energy Project	Wind Turbine	14 MW	185	Kern County	Draft EIR released April 2011
Monte Vista Solar Array	Solar Photovoltaic	126 MW	1,040	Kern County	Notice of Preparation for a Draft EIR filed March 2010
Morgan Hills Wind Project	Wind	230 MW	3,604	Kern County	Application submitted Nov. 2010
North Sky River Wind Project	Wind Turbine	326 MW	1,330	Kern County	Notice of Preparation for a Draft EIR filed Nov. 2010
Pacific Wind Energy Project	Wind Turbine	151 MW	8,300	Kern County	Approved by Kern County Oct. 2010
Pahnamid Wind Energy Project	Wind Turbine	411 MW	7,106	Kern County	Notice of Preparation for a Draft EIR filed April 2011
PdV Wind Energy Project	Wind Turbine	300 MW	5,820	Kern County	Approved by Kern County July 2008
Pine Canyon Wind Project	Wind Turbine	150 MW	12,000	Kern County	Preliminary planning
Pine Tree Solar Project	Solar Photovoltaic	10 MW	75	Kern County	Preliminary planning
Pine Tree Wind & Expansion	Wind Turbine	135 MW	n/a	Kern County	Preliminary planning
RE Distributed Solar Project	Solar Photovoltaic	221 MW	1,709	Kern County	Notice of Preparation for a Draft EIR filed Jan. 2011
Ridge Rider Solar Park Project	Solar Photovoltaic	38 MW	475	Kern County	Notice of Preparation of a Draft EIR filed March 2010
Rising Tree Wind Farm	Wind Turbine	234 MW	2,745	Kern County	Notice of Intent to prepare a EIS/EIR filed Jan. 2011
Rosamond Solar Array	Solar Photovoltaic	155 MW	1,177	Kern County	Notice of Preparation of a Draft EIR filed March 2010
Rosamond Solar Project	Solar Photovoltaic	120 MW	960	Kern County	Approved by Kern County Nov. 2010
Sand Canyon Wind Projects	Wind Turbine	40 MW	300	Kern County	Notice of Preparation of a Draft EIR filed Oct. 2010
Willow Springs Solar Array Project	Solar Photovoltaic	160 MW	1,402	Kern County	Notice of Preparation of a Draft EIR filed March 2010
Windstar Wind Energy Project	Wind Turbine	65 MW	1,007	Kern County	Approved by Kern County April 2009

There are also plans in various stages of development to establish additional wind and solar energy projects on BLM land in the Project vicinity. The submission of an application to BLM is a preliminary step in the project planning process, but not all applications ultimately result in successful project development. Below is a list of current applications for wind and solar energy generation projects in the Project vicinity submitted to BLM's Ridgecrest Field Office as of February 2010 (U.S. Department of the Interior, Bureau of Land Management – Renewable Energy).

TABLE 8B. BLM RIDGECREST OFFICE APPLICATIONS FOR WIND AND SOLAR ENERGY GENERATION PROJECTS IN THE PROJECT VICINITY.

Serial Number	Applicant	Date Application Received, ROW Grant Issued, Last Amended Date	Approximate Area (Acres)	Project Type	Location
CACA 46978	Sean Roberts, Renewable Land LLC	7/1/04	528	Pending Wind	Mojave
CACA 47848	Oak Creek Energy	1/11/06	7,349	Pending Wind	Lucchese
CACA 48536	Oak Creek Energy	7/25/06	1,800	Pending Wind	Soledad Mountain Wind Project

Serial Number	Applicant	Date Application Received, ROW Grant Issued, Last Amended Date	Approximate Area (Acres)	Project Type	Location
CACA 48820	First Solar (Formally OptiSolar Inc.)	12/13/08	5,760	Pending Solar	Mojave Area
CACA 49577	Power Partners SW (enXco)	8/10/07	1,816	Pending Wind	Soledad area
CACA 50171	AES SEAWEST INC	7/3/09	120	Pending Wind	Kern County
CACA 50768	Riverside Wind Energy LLC	4/20/09	480	Pending Wind	Gorman
CACA 51016	Advanced Dev Services, Inc	4/30/09	11,174	Pending Wind	Kern County
CACA 51335	Alta Windpower Dev., LLC	7/13/09	584	Pending Wind	Kern County
CACA 51561	Power Partners Southwest	12/11/09	1,160	Pending Wind	Kern County

Other Major Projects

Transportation and Public Facilities

California High Speed Rail – This project proposes a ±700-mile high speed rail line from Sacramento to San Diego. The Statewide Programmatic EIS/EIR was completed in 2005, and the Bay Area to Central Valley High-Speed Train Program EIS/EIR was completed in 2008. Multiple second-tier project-level environmental documents (with preliminary engineering design) are currently underway (California High Speed Rail Authority).

Pacific Pipeline Storm Relocation Project and Access Road Repairs – Pacific Pipeline is proposing to relocate several miles of crude oil pipeline to more stable ground within the ANF. Project implementation was expected in November 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Antelope Valley Water Bank Project – This project proposes to develop facilities to store and recharge imported surface water and associated delivery and distribution pipelines. The 13,440-acre facility area would be bounded by the Kern/Los Angeles County border line (also known as Avenue A) to the south and Rosamond Boulevard to the north, and between 170th Street West and 100th Street West in unincorporated Kern County (U.S. Department of the Interior, Bureau of Reclamation – Mid-Pacific Region).

Soledad Canyon Cemex Project – The Soledad Canyon Cemex project would be a 56-million-ton sand and gravel mining project in the Soledad Canyon area. The BLM approved the project with mitigating measures in 2000, and the Interior Board of Land Appeals affirmed that decision in 2002. A City of Santa Clarita challenge to the US Supreme Court was denied in 2006. This project is pending development with ongoing challenges and delays (Cemex United States).

Community Development

Centennial, California – The proposed project site consists of 12,000 acres located one mile east of Interstate 5 (I-5) and adjacent to State Highway 138 in Los Angeles County. The project would include a specific plan and subdivision entitlements (i.e., tract maps and conditional use permits) for a master planned community. The specific plan proposes a maximum of 23,000 dwelling units and 14 million total square feet of non-residential development of employment areas (12,233,390 square feet) and retail serving centers (1,986,336 square feet), anticipated to be built over approximately 20 years, with build-out expected in 2030. If the project is approved by Los Angeles County, it is estimated that the non-residential development may generate approximately 31,000 jobs. The draft Specific Plan for the unincorporated community of Centennial was submitted to Los Angeles County in February 2003 and is currently being reviewed by the county (Centennial, California).

Maintenance and Landscape Management Projects

Bouquet Canyon Road Realignment – Los Angeles County Department of Public Works is proposing to straighten some sections of Bouquet Canyon Road and to raise the road surface by approximately nine feet. A Memorandum of Understanding between ANF and Los Angeles County is currently under development to initiate the project (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

San Francisquito Road Rehabilitation and Sediment Disposal Site – Los Angeles County Department of Public Works is proposing a road realignment and new bridge along San Francisquito Road within the ANF and to use eight acres of Forest land as a spoils site in support of construction activities. Public Scoping began in June 2007, and a decision was expected in September 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Old Ridge Route Storm Damage Repair – USFS is proposing to repair and provide maintenance to seven storm-damaged locations along the Old Ridge Route in ANF. A decision on the project is expected in late 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Livestock Grazing Allotments – BLM currently authorizes both cattle and sheep grazing on 11 grazing allotments in and around the project area. The livestock are authorized with 10 year permits/leases and yearly authorizations. These allotments encompass over one half million acres of BLM-managed lands. The number of livestock grazed each year depends upon weather conditions. The majority of the livestock are sheep. The number of sheep average around thirty thousand head. Three of the allotments support several thousand head of cattle (Harris 2010).

Tule Ridge/South Portal Fuels Reduction Project – USFS proposes fuels reduction and re-establishment of a fuel break to provide protection to unincorporated community of Green Valley. The project would also enhance wildlife for mammals and birds (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Jupiter Fuelbreak Project – USFS proposes to re-establish an existing fuel break that begins southwest of the unincorporated community of Green Valley and travels east, bisecting Jupiter Mountain, before heading south to Bouquet Reservoir.

Santa Clara/Mojave River Rangers District Plantation Maintenance Project – The proposed project would consist of vegetation maintenance at 13 plantations located within the ANF in order to reduce wildfire risk, and improve wildlife habitat and the vitality of individual remaining trees. Proposed actions include removal of dead trees, thinning of live trees, pruning, removing weeds, and planting for reforestation where necessary. This action was approved by the District Ranger in January 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Lake Hughes Plantation Restoration Project – The proposed project would restore unauthorized off-highway vehicle trails at the Christian and Taylor Plantations located within the ANF in order to reduce soil erosion, the spread of weeds, destruction of native plants, soil compaction, and wildlife habitat loss. Proposed actions include recontouring and decompacting soils, reseeding with native species, and reinforcing check dams. The project was approved by the District Ranger in 2009 and scheduled for implementation in January 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Bouquet and San Francisquito Habitat Improvement Project – The project proposes invasive species removal in Bouquet and San Francisquito Canyons (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Local Projects

In conjunction with the major projects listed above, a summary of local foreseeable projects within the study area that could contribute to cumulative effects are summarized in the table below. These proposed projects were gathered from applications to the planning departments of the various jurisdictions and have been categorized by project type.

TABLE 8C. PROPOSED LOCAL PROJECTS IN THE PROJECT VICINITY.

	Kern County	Los Angeles County[1]	City of California City	City of Palmdale[2]	City of Lancaster	City of Santa Clarita	City of Los Angeles	City of San Fernando
Single Family Residential (may include multiple units)	1	96	0	14	93	10	2	2
Multi Family Residential (may include multiple units)	28	9	0	9	2	1	2	1
Schools	2	2	0	9	2	0	0	0
Religious Uses	10	7	0	13	0	0	1	1
Recreational Facilities	7	5	0	7	1	0	0	1
Public Facilities – police, fire, library, correctional	2	5	0	4	0	0	0	0
Commercial/ Office Development	40	33	0	96	6	21	2	7
Hotels/Motels	1	0	0	9	2	1	1	2
Medical/Care Facilities	4	6	0	16	0	1	0	1
Industrial Facilities	20	0	0	17	1	6	2	2
Mining Operations	15	0	0	4	0	0	0	0
RV Facilities	2	0	0	0	0	0	0	0
Animal Facilities	8	6	0	1	0	0	0	0
Aviation Facilities	2	0	0	0	0	0	0	0
Non-Commercial Energy Facilities	1	2	0	0	0	0	0	0

[1] Projects listed for Los Angeles County include all projects that could contribute to cumulative effects within the following County Districts: Antelope Valley West, Bouquet Canyon, Castaic Canyon, Chatsworth, Lancaster, Leona Valley, Mount Gleason, Newhall, North Palmdale, Palmdale, Quartz Hill, Sand Canyon, Soledad. Some identified projects included may be outside of the study area.

[2] Projects listed for the City of Palmdale include all projects that could contribute to cumulative effects within the City. Some identified projects included may be outside of the study area.

8.6.5. Cumulative Impacts Summary

Past and ongoing development within the proposed BRRTP area has resulted in alterations to the natural geologic conditions. Past, existing and future projects could contribute cumulative impacts on the geologic resources within the study area by creating erosion of highly sensitive soils and alteration of distinctive geologic features. These potential impacts to geologic resources would be limited to areas within and adjacent to the boundaries of individual projects, and such impacts would have to occur in similar locations within the boundaries of the proposed BRRTP. However, construction of the proposed BRRTP would preclude other projects from being implemented concurrently in the same location. Therefore, proposed Project impacts related to highly erosion-sensitive soils and highly distinctive geologic features would not have the potential to combine with similar impacts from other projects and would not have cumulative impacts.

The major geologic and seismic impacts that may affect the proposed BRRTP (surface fault rupture, seismic ground shaking, liquefaction, landslides, settlement, expansive soils, corrosive soils, and groundwater) are related to outside effects from the natural environment that may impact the Project, and are not related to impacts from other past, present, or future projects in the study area. The impacts related to surface fault rupture, ground shaking, liquefaction and earthquake-induced landslides are related to earthquakes and would not be due to other projects in the BRRTP impact area. The effects of soil erosion that may impact the Project components are due to the nature of the earth materials, steepness of the terrain and other natural factors that are not related to other projects. Potential settlement, expansive soils and corrosive soils are also related to the inherent natural properties of soils underlying the Project components, and would not be due to effects from other projects. Therefore, the impacts to the BRRTP related to potential geologic and seismic hazards are not considered to have cumulative impacts, since they are not due to other past, present or future projects within the impact area.

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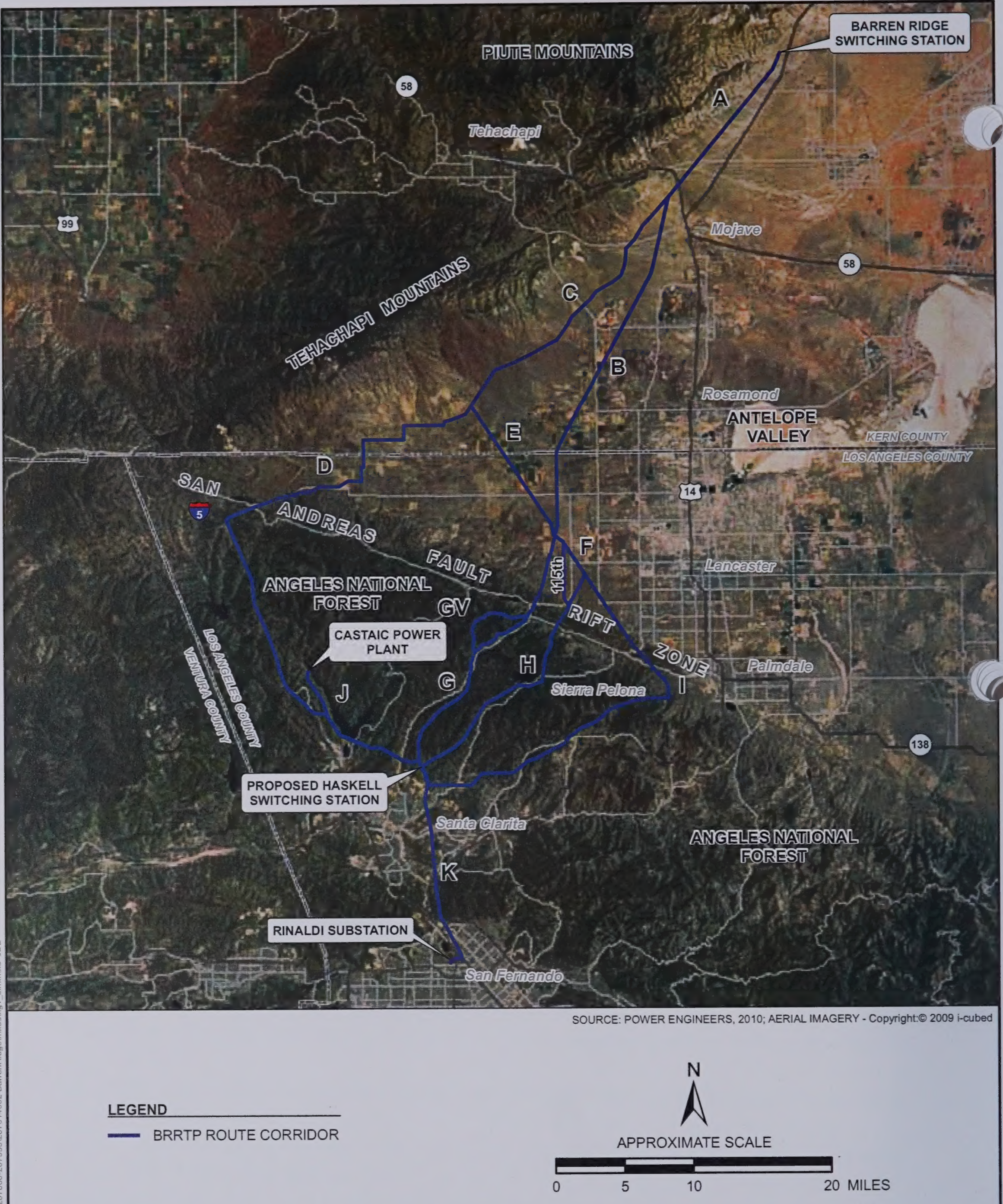
10.0 ACRONYMS AND ABBREVIATIONS

ANF	Angeles National Forest
BLM	United States Department of the Interior, Bureau of Land Management
BMPs	Best Management Practices
BR-RIN	Barren Ridge – Rinaldi Transmission Line
BRRTP	Barren Ridge Renewable Transmission Project
CBC	California Building Code
CDMG	California Division of Mines & Geology
CDWR	California Department of Water Resources
CEQA	California Environmental Quality Act
CGS	California Geological Survey
COM Plan	Construction, Operation and Maintenance Plan
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
g	Acceleration Due to Gravity
GIS	Geographic Information Systems
LADWP	Los Angeles Department of Water & Power
MCE	Maximum Considered Earthquake
M_{max}	Maximum Moment Magnitude
MSL	Mean Sea Level
NEPA	National Environmental Protection Act
NFS	National Forest Service
NRCS	National Resource Conservation Service
PDCI	Pacific Direct Current Intertie
PGA	Peak Ground Acceleration
POD	Plan of Development
ROW	Right of Way
SCE	Southern California Edison
SCEC	Southern California Earthquake Center
SWPPP	Storm Water Pollution Prevention Plan
TRTP	Tehachapi Renewable Transmission Project
TSP	Tubular Steel Poles
USDA	United States Department of Agriculture
USFS	United States Forest Service
USGS	United States Geological Survey

GEOTECHNICAL FIGURES


BARREN RIDGE SWITCHING STATION
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RINALDI SUBSTATION
San Fernando
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SOURCE: POWER ENGINEERS, 2010; AERIAL IMAGERY - Copyright:© 2009 i-cubed

NOTE: ALL DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

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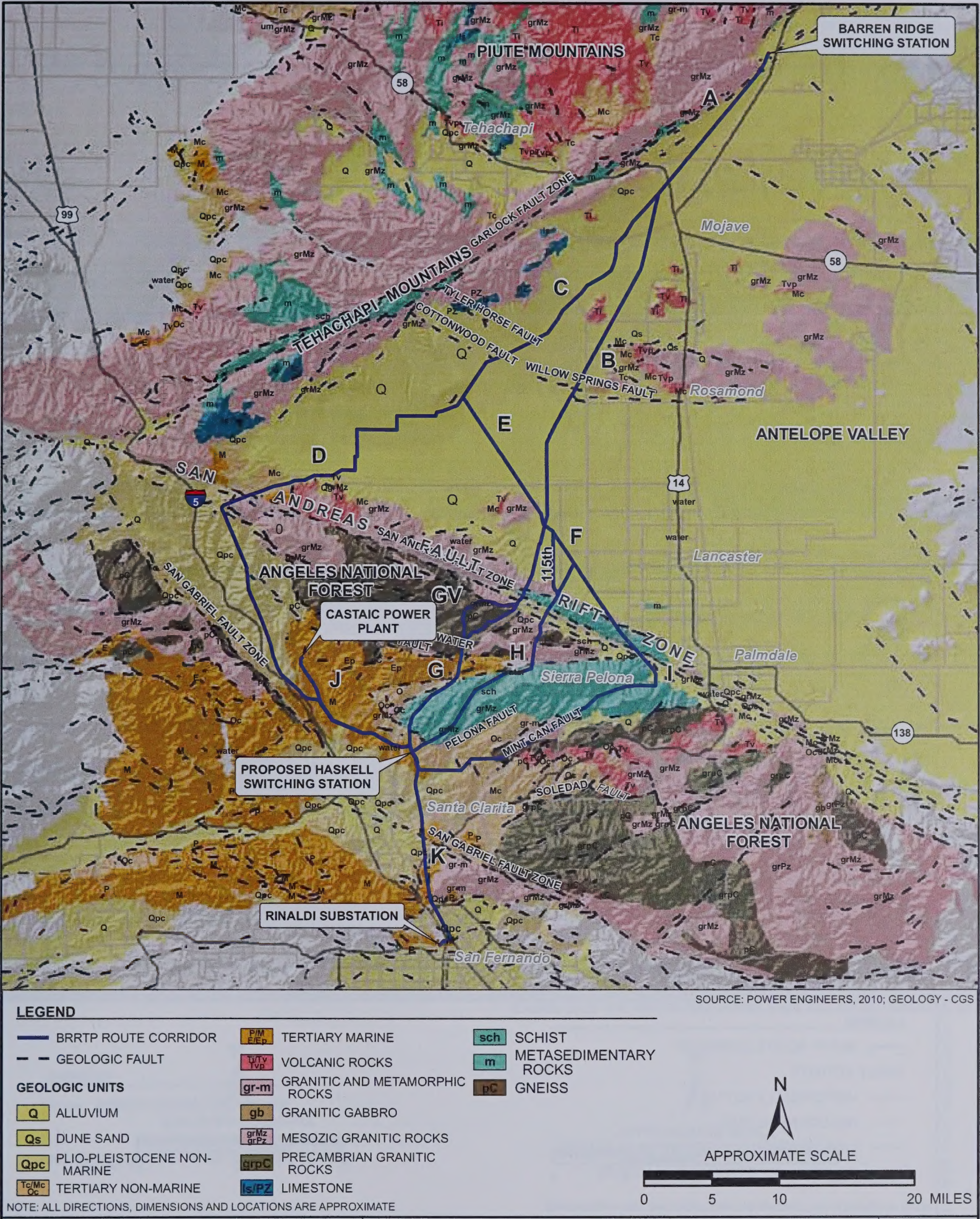
Ninyo & Moore

PROJECT AREA LOCATION MAP

PROJECT NO.	DATE
207014002	5/10

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
LOS ANGELES AND KERN COUNTIES, CALIFORNIA

FIGURE
1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PROPOSED HASKELL SWITCHING STATION
Santa Clarita
RINALDI SUBSTATION
San Fernando
water
SOURCE: POWER ENGINEERS, 2010; GEOLOGY - CGS
LEGEND
BRRTP ROUTE CORRIDOR
GEOLOGIC FAULT
GEOLOGIC UNITS
Q ALLUVIUM
Qs DUNE SAND
Qpc PLIO-PLEISTOCENE NON-MARINE
Tc/Mc Oc TERTIARY NON-MARINE
P/M E/Ep TERTIARY MARINE
Ti/Tv Tvp VOLCANIC ROCKS
gr-m GRANITIC AND METAMORPHIC ROCKS
gb GRANITIC GABBRO
grMz grPz MESOZIC GRANITIC ROCKS
grpC PRECAMBRIAN GRANITIC ROCKS
ls/PZ LIMESTONE
sch SCHIST
m METASEDIMENTARY ROCKS
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NOTE: ALL DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

Ninyo & Moore		GEOLOGIC MAP	FIGURE
PROJECT NO.	DATE	BARREN RIDGE RENEWABLE TRANSMISSION PROJECT LOS ANGELES AND KERN COUNTIES, CALIFORNIA	2
207014002	5/10		

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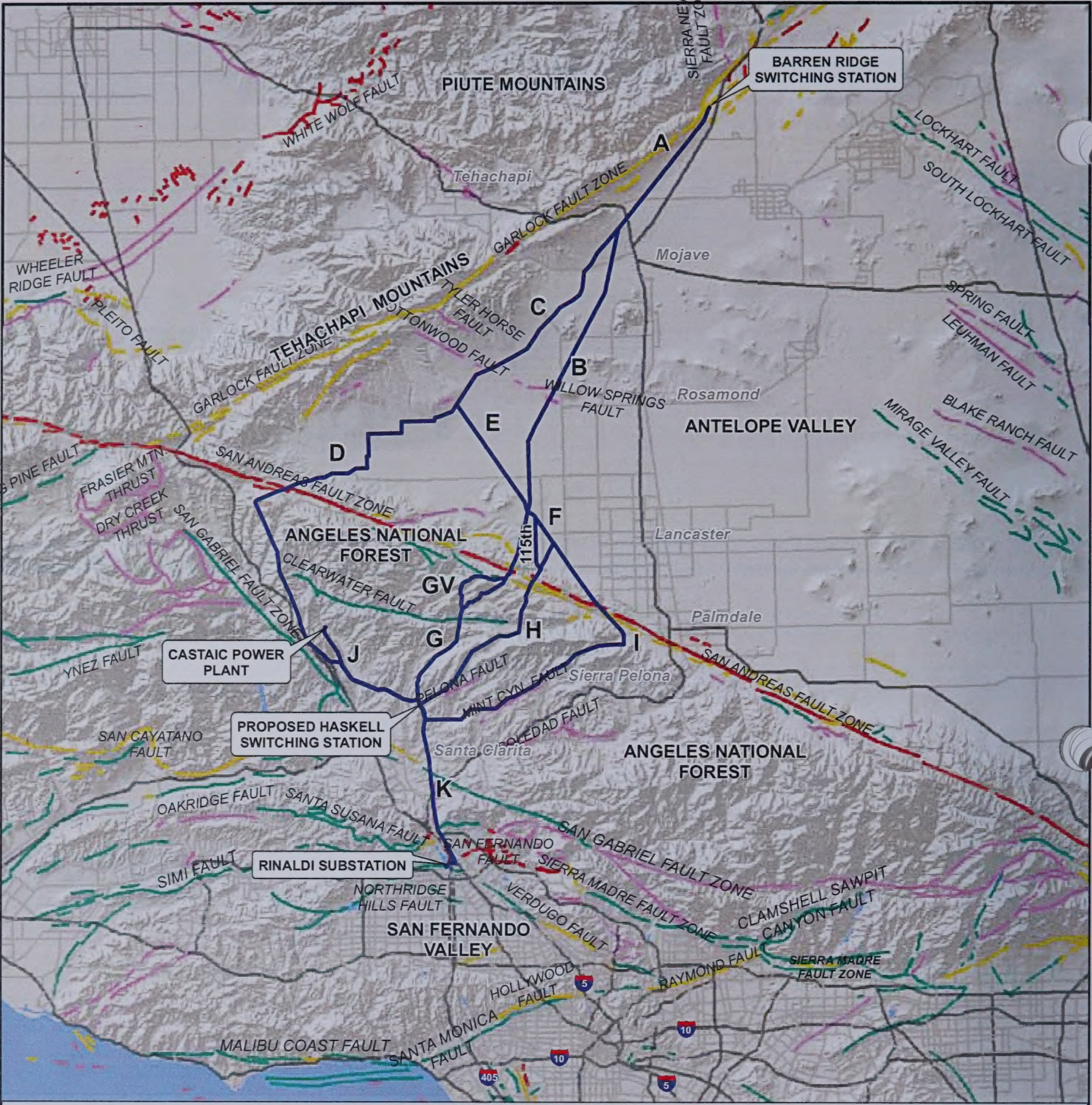
BARREN RIDGE SWITCHING STATION
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VERDUGO FAULT
CLAMSHELL SAWPIT CANYON FAULT
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RAYMOND FAULT
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SOURCE: FAULTS - CALIFORNIA GEOLOGICAL SURVEY (CGS), 2001; BASE - ESRI, 2008; POWER ENGINEERS, 2010

LEGEND

▬ BRRTP ROUTE CORRIDOR

FAULT ACTIVITY

▬ HISTORICALLY ACTIVE

▬ HOLOCENE ACTIVE

▬ LATE QUATERNARY (POTENTIALLY ACTIVE)

▬ QUATERNARY (POTENTIALLY ACTIVE)

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APPROXIMATE SCALE

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NOTE: ALL DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

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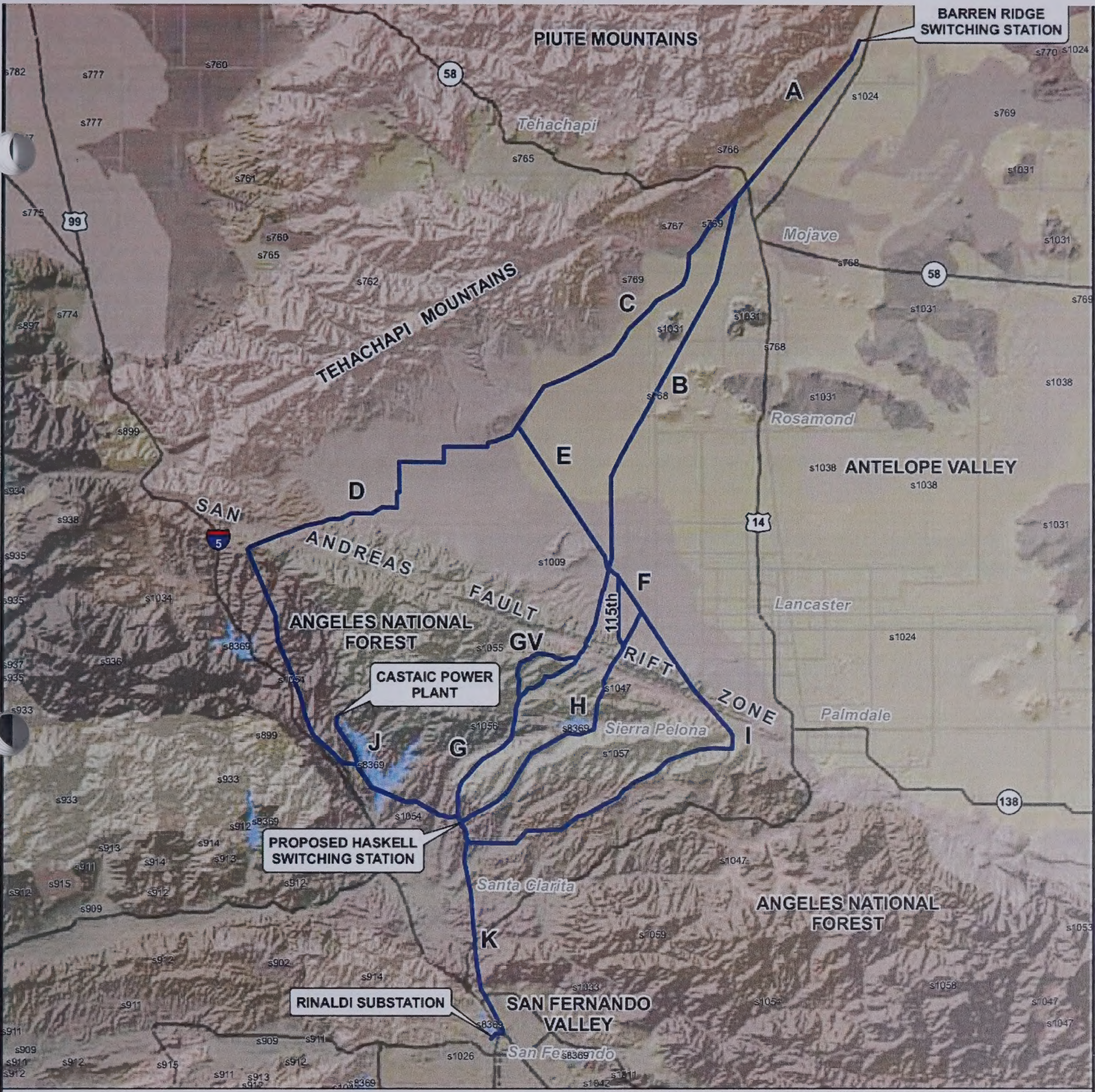
Ninyo & Moore		FAULT LOCATION MAP	FIGURE
PROJECT NO.	DATE	BARREN RIDGE RENEWABLE TRANSMISSION PROJECT LOS ANGELES AND KERN COUNTIES, CALIFORNIA	3
207014002	5/10		


BARREN RIDGE SWITCHING STATION
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SOURCE: SOILS - U.S. DEPT OF AGRICULTURE, NRCS, 2006; POWER ENGINEERS, 2010

LEGEND

BRRTP ROUTE CORRIDOR

NOTE: SEE FIGURE 4A FOR SOILS MAP LEGEND

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APPROXIMATE SCALE

0 5 10 20 MILES

NOTE: ALL DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

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Ninyo & Moore

PROJECT NO.	DATE
207014002	5/10

REGIONAL SOILS MAP

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
LOS ANGELES AND KERN COUNTIES, CALIFORNIA

FIGURE

4

LEGEND

U.S. GENERAL SOIL TYPES - USDA.NRCS, 2006

🟫 s1009 - RAMONA-HANFORD-GREENFIELD
🟫 s1011 - VISTA-FALLBROOK-CIENEBA
🟫 s1024 - WASCO-ROSAMOND-CAJON
🟫 s1026 - URBAN LAND-SORRENTO-HANFORD
🟫 s1031 - ROCK OUTCROP-HI VISTA-CALVISTA-CAJON
🟫 s1033 - ZAMORA-URBAN LAND-RAMONA
🟫 s1034 - OAK GLEN-GULLIED LAND-GORMAN-GAVIOTA-CUSHENBURY
🟫 s1038 - PLAYAS
🟫 s1042 - URBAN LAND-LITHIC XERORTHENTS-HAMBRIGHT-CASTAIC
🟫 s1047 - WILSHIRE-SOBOBA-OAK GLEN-AVAWATZ
🟫 s1053 - SPRINGDALE-ROCK OUTCROP-ETSEL FAMILY
🟫 s1054 - SOBRANTE-EXCHEQUER-CIENEBA
🟫 s1055 - GAVIOTA-CIENEBA-CAPISTRANO-CAPERTON
🟫 s1056 - STONYFORD-ROCK OUTCROP-CHILAO
🟫 s1057 - SOBRANTE-LODO
🟫 s1058 - TOLLHOUSE-ROCK OUTCROP-ETSEL FAMILY-BAKEOVEN
🟫 s1059 - PISMO-ETSEL FAMILY-CIENEBA-CAPERTON
🟫 s760 - WASIOJA-HESPERIA-ARVIN
🟫 s761 - WALONG-TUNIS-PLEITO-CHANAC-BADLAND
🟫 s762 - WALONG-ROCK OUTCROP-EDMUNDSTON-ANAVERDE
🟫 s765 - TEHACHAPI-STEUBER-HAVALA
🟫 s766 - TUNIS-TRIGGER-TORRIORTHENTS-ROCK OUTCROP
🟫 s767 - WHITEWOLF-ROCK OUTCROP-PAJUELA
🟫 s768 - ROSAMOND VARIANT-ROSAMOND-PLAYAS-GILA-CAJON VARIANT-CAJON
🟫 s769 - NEURALIA-GARLOCK-CAJON-ALKO
🟫 s770 - RANDSBURG-MUROC
🟫 s774 - PANOCHE-MILHAM-KIMBERLINA
🟫 s775 - WASCO-KIMBERLINA
🟫 s777 - LOKERN-BUTTONWILLOW
🟫 s782 - WESTHAVEN-LERDO-EXCELSIOR-CAJON
🟫 s814 - SOPER-ROCK OUTCROP-JILSON-DUNNLAKE
🟫 s897 - NACIMIENTO-LOS OSOS-BALCOM-AYAR
🟫 s899 - VISTA-CIENEBA-ANDREGG
🟫 s902 - SAN ANDREAS-ARUJO-ARNOLD
🟫 s909 - XEROFLUVENTS-SALINAS-PICO-MOCHO-METZ-ANACAPA
🟫 s911 - SOPER-CHESTERTON
🟫 s912 - SAN BENITO-CASTAIC-CALLEGUAS-BALCOM-BADLAND
🟫 s913 - SESPE-MILLSHOLM-MALIBU-LODO-HAMBRIGHT
🟫 s914 - ROCK OUTCROP-LITHIC XERORTHENTS-CALLEGUAS-BADLAND
🟫 s915 - ROCK OUTCROP-LITHIC XERORTHENTS-HAMBRIGHT-GILROY
🟫 s933 - MILLSHOLM-MILLERTON-LODO
🟫 s934 - MODJESKA FAMILY-COARSEGOLD-ARAMBURU VARIANT
🟫 s935 - MARPA-HILT-ARRASTRE
🟫 s936 - LOS GATOS-GAMBOA
🟫 s937 - XEROFLUVENTS-OAK GLEN-DOTTA
🟫 s938 - MAHOGAN-GLEAN
🟦 s8369 - WATER

Ninyo & Moore		REGIONAL SOILS MAP LEGEND	FIGURE
PROJECT NO.	DATE	BARREN RIDGE RENEWABLE TRANSMISSION PROJECT LOS ANGELES AND KERN COUNTIES, CALIFORNIA	4A
207014002	5/10		

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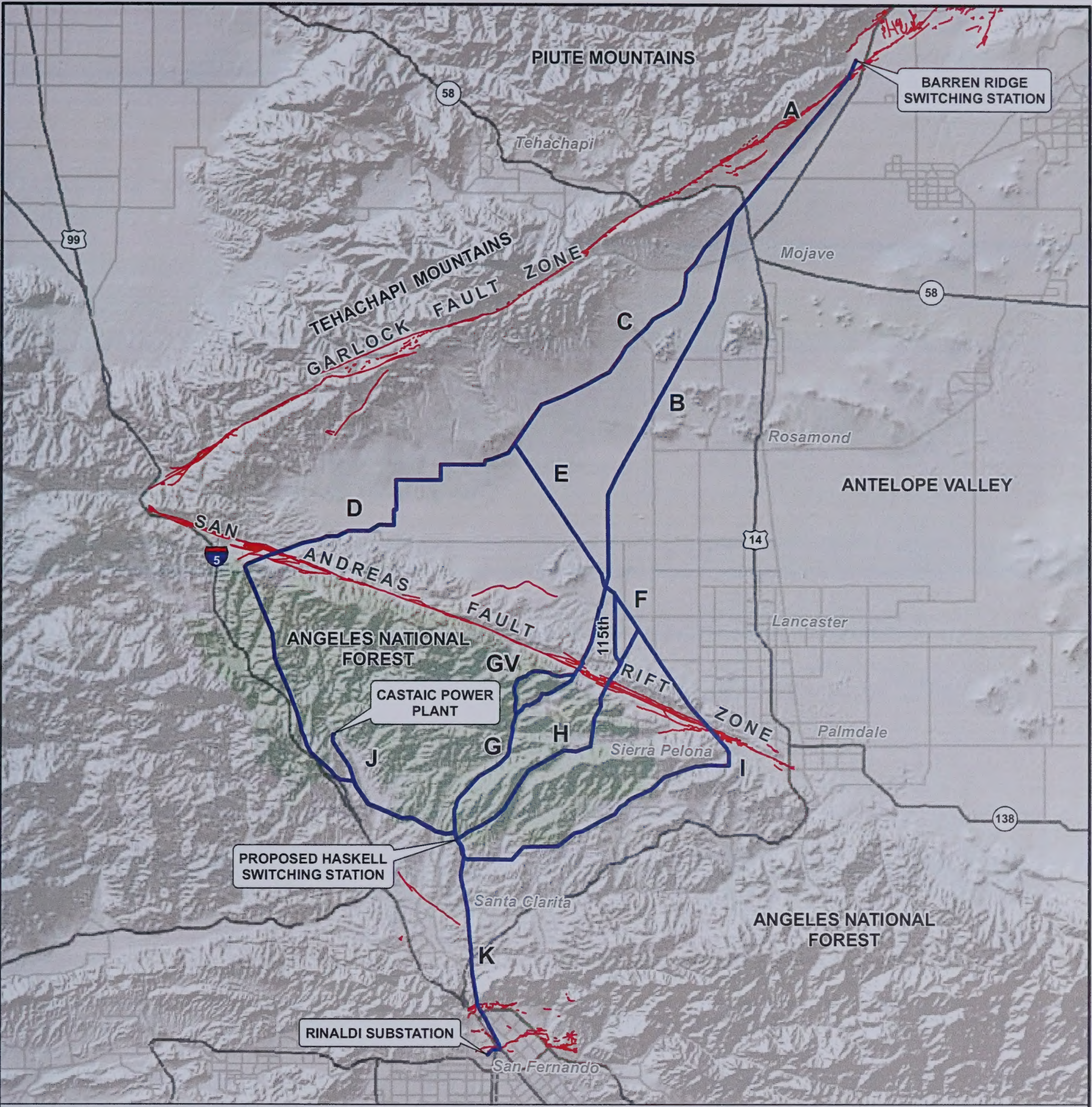
PIUTE MOUNTAINS
BARREN RIDGE SWITCHING STATION
58
A
Tehachapi
99
Mojave
58
TEHACHAPI MOUNTAINS
GARLOCK FAULT ZONE
C
B
Rosamond
ANTELOPE VALLEY
E
D
SAN ANDREAS FAULT RIFT ZONE
5
14
F
Lancaster
115th
ANGELES NATIONAL FOREST
GV
CASTAIC POWER PLANT
Palmdale
J
G
H
Sierra Pelona
I
138
PROPOSED HASKELL SWITCHING STATION
Santa Clarita
ANGELES NATIONAL FOREST
K
RINALDI SUBSTATION
San Fernando

SOURCE: CALIFORNIA GEOLOGIC SURVEY, 2001; BASE - ESRI, 2008; POWER ENGINEERS, 2010

LEGEND

- ▬ BRRTP ROUTE CORRIDOR
- ▬ EARTHQUAKE FAULT ZONE (FORMERLY ALQUIST-PRIOLO SPECIAL STUDIES ZONES)
- 🟩 U.S. FOREST SERVICE LAND

N

APPROXIMATE SCALE

0 5 10 20 MILES

NOTE: ALL DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

Ninyo & Moore		EARTHQUAKE FAULT ZONES MAP	FIGURE
PROJECT NO.	DATE	BARREN RIDGE RENEWABLE TRANSMISSION PROJECT LOS ANGELES AND KERN COUNTIES, CALIFORNIA	5
207014002	5/10		

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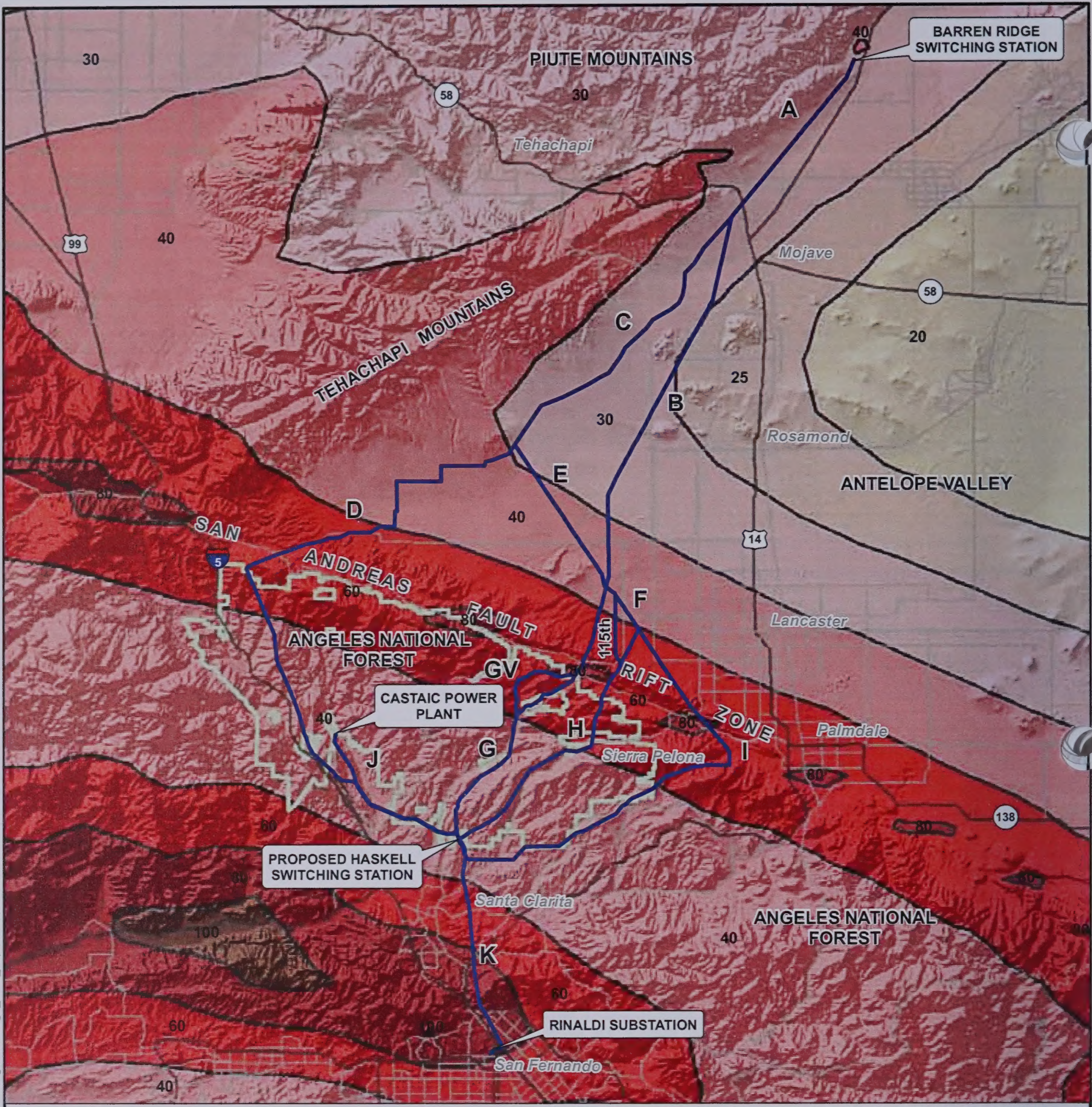
PIUTE MOUNTAINS
BARREN RIDGE SWITCHING STATION
30
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58
A
Tehachapi
99
TEHACHAPI MOUNTAINS
Mojave
C
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25
B
Rosamond
ANTELOPE VALLEY
E
D
SAN ANDREAS FAULT
RIFT ZONE
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115th
Lancaster
ANGELES NATIONAL FOREST
GV
CASTAIC POWER PLANT
60
80
H
Palmdale
I
J
G
Sierra Pelona
138
PROPOSED HASKELL SWITCHING STATION
Santa Clarita
100
K
RINALDI SUBSTATION
San Fernando

SOURCE: GROUND ACCELERATION - USGS, 2002 REV.; BASE - ESRI, 2008; POWER ENGINEERS, 2010

LEGEND

BRRTP ROUTE CORRIDOR

80 PEAK GROUND SHAKING CONTOURS (PERCENT OF GRAVITY'S ACCELERATION)

U.S. FOREST SERVICE LAND

N

APPROXIMATE SCALE

0 5 10 20 MILES

NOTE: ALL DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

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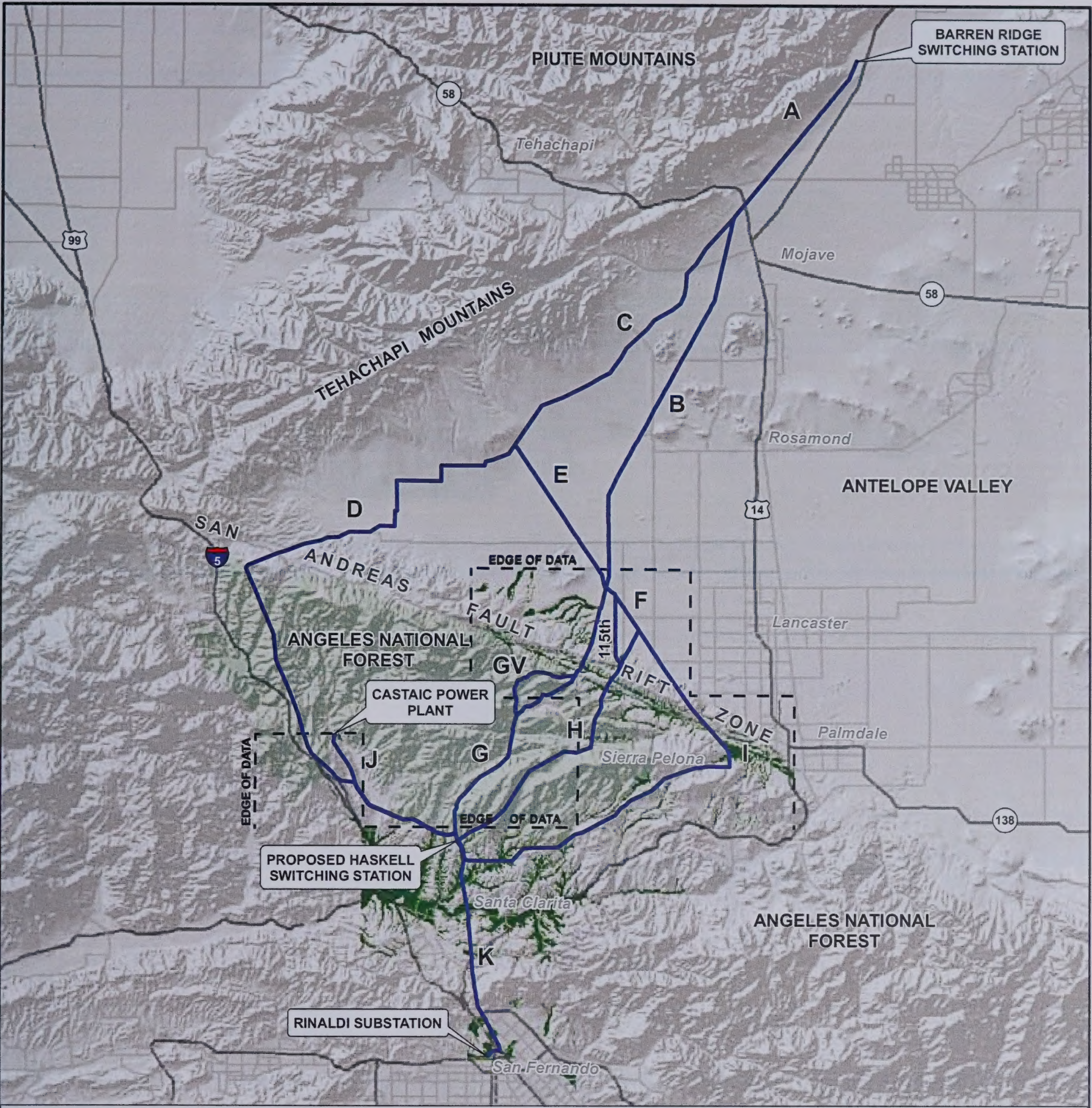
Ninyo & Moore

ESTIMATED PEAK HORIZONTAL GROUND ACCELERATION CONTOURS

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
LOS ANGELES AND KERN COUNTIES, CALIFORNIA

PROJECT NO.	DATE	FIGURE
207014002	5/10	6


BARREN RIDGE SWITCHING STATION
PIUTE MOUNTAINS
58
A
Tehachapi
99
Mojave
58
TEHACHAPI MOUNTAINS
C
B
Rosamond
ANTELOPE VALLEY
E
D
14
SAN ANDREAS FAULT RIFT ZONE
5
EDGE OF DATA
F
Lancaster
ANGELES NATIONAL FOREST
115th
GV
CASTAIC POWER PLANT
H
Palmdale
EDGE OF DATA
J
G
Sierra Pelona
I
EDGE OF DATA
138
PROPOSED HASKELL SWITCHING STATION
Santa Clarita
ANGELES NATIONAL FOREST
K
RINALDI SUBSTATION
San Fernando

SOURCE: LIQUEFACTION AREAS - CGS; BASE - ESRI, 2008; POWER ENGINEERS, 2010

LEGEND

—	BRRTP ROUTE CORRIDOR
🟩	LIQUEFACTION AREAS WHERE HISTORIC OCCURRENCE OF LIQUEFACTION OR LOCAL GEOLOGIC, GEOTECHNICAL AND GROUNDWATER CONDITIONS INDICATE A POTENTIAL FOR PERMANENT GROUND DISPLACEMENTS SUCH THAT MITIGATION AS DEFINED BY PUBLIC RESOURCES CODE SECTION 2693(C) WOULD BE REQUIRED.
🟩	U.S. FOREST SERVICE LAND

N

APPROXIMATE SCALE

0 5 10 20 MILES

NOTE: ALL DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

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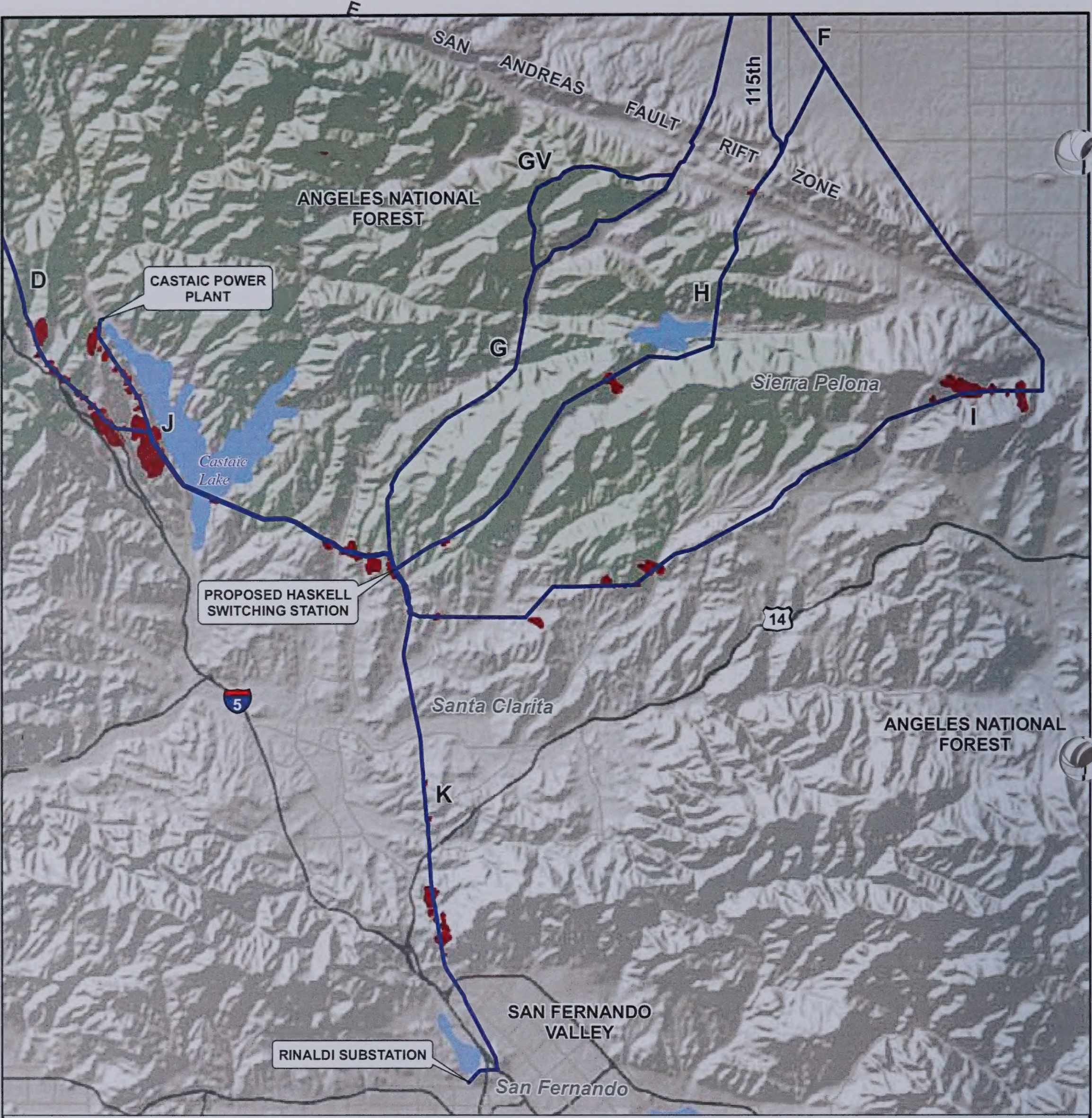
Ninyo & Moore		**LIQUIFACTION HAZARD ZONES MAP**	FIGURE
PROJECT NO.	DATE	BARREN RIDGE RENEWABLE TRANSMISSION PROJECT LOS ANGELES AND KERN COUNTIES, CALIFORNIA	7
207014002	5/10		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SAN ANDREAS FAULT RIFT ZONE
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GV
ANGELES NATIONAL FOREST
D
CASTAIC POWER PLANT
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G
Sierra Pelona
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J
Castaic Lake
PROPOSED HASKELL SWITCHING STATION
14
5
Santa Clarita
ANGELES NATIONAL FOREST
K
SAN FERNANDO VALLEY
RINALDI SUBSTATION
San Fernando

SOURCE: BASE - ESRI, 2008; POWER ENGINEERS, 2010; LANDSLIDE INVENTORY - CGS SEISMIC HAZARDS REPORTS AND DIBBLEE MAPS.

LEGEND

- ━ BRRTP ROUTE CORRIDOR
- 🟥 APPROXIMATE LOCATION OF MAPPED LANDSLIDE AREAS TRAVERSED BY ROUTE CORRIDORS
- 🟩 U.S. FOREST SERVICE LAND

N

APPROXIMATE SCALE

0 2.5 5 10 MILES

NOTE: ALL DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

Monday, May 3, 2010 12:53:52 PM \200000_IRV\207000-207999\207014002 BarrenRidge\mxds\USFS\fig8_landslide_inv.mxd JDL

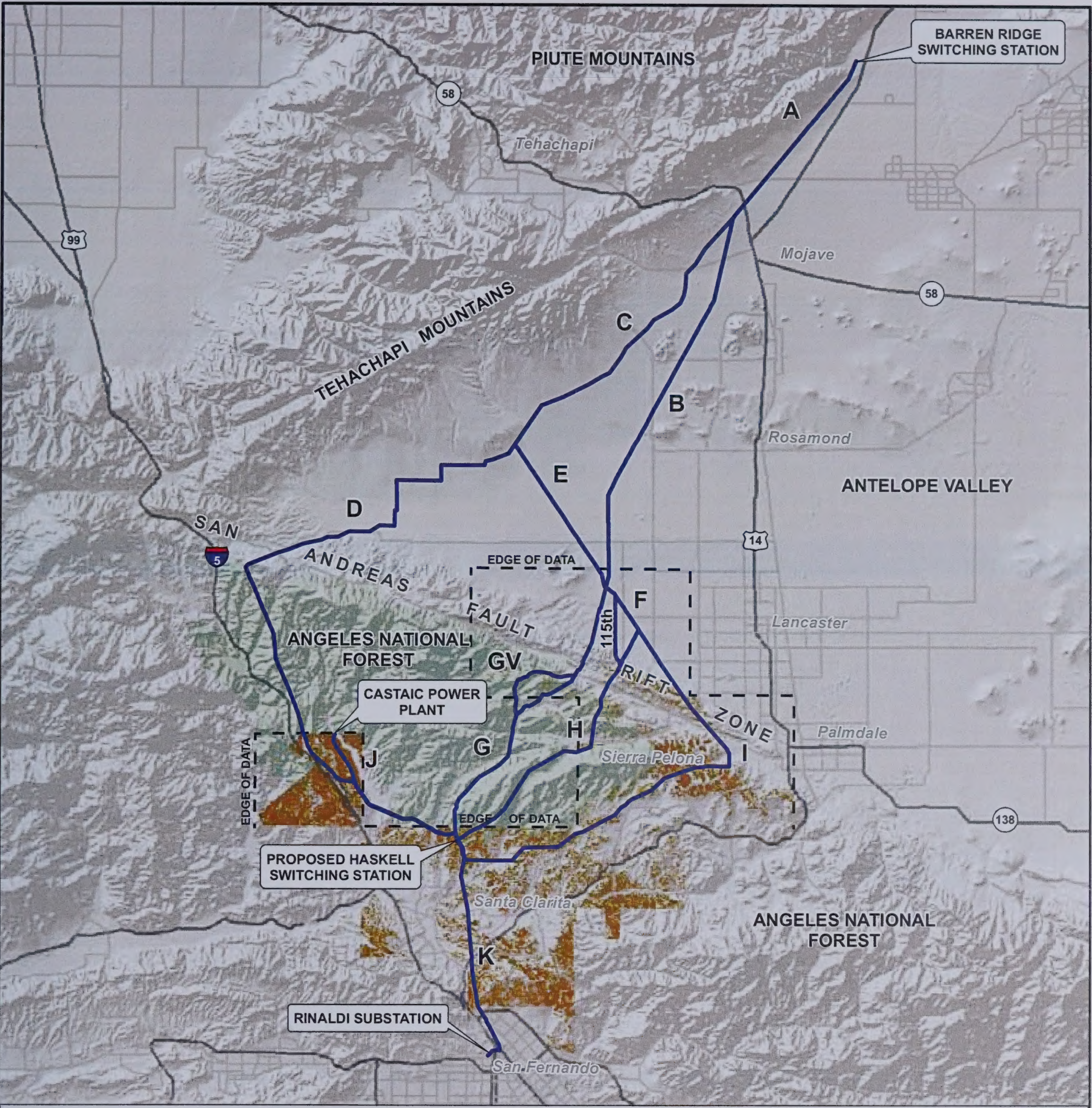
Ninyo & Moore

MAPPED LANDSLIDE INVENTORY

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
LOS ANGELES AND KERN COUNTIES, CALIFORNIA

PROJECT NO.	DATE
207014002	5/10

FIGURE
8


BARREN RIDGE SWITCHING STATION
PIUTE MOUNTAINS
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A
Tehachapi
99
Mojave
58
TEHACHAPI MOUNTAINS
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B
Rosamond
E
ANTELOPE VALLEY
D
SAN ANDREAS FAULT RIFT ZONE
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EDGE OF DATA
F
115th
Lancaster
ANGELES NATIONAL FOREST
GV
CASTAIC POWER PLANT
H
Palmdale
EDGE OF DATA
J
G
Sierra Pelona
I
EDGE OF DATA
138
PROPOSED HASKELL SWITCHING STATION
Santa Clarita
ANGELES NATIONAL FOREST
K
RINALDI SUBSTATION
San Fernando

SOURCE: EQ INDUCED LANDSLIDE HAZARD ZONES - CGS; BASE - ESRI, 2008; POWER ENGINEERS, 2010

LEGEND

▬	BRRTP ROUTE CORRIDOR
🟫	EARTHQUAKE-INDUCED LANDSLIDE AREAS WHERE PREVIOUS OCCURRENCE OF LANDSLIDE MOVEMENT, OR LOCAL TOPOGRAPHIC, GEOLOGIC, GEOTECHNICAL AND SUBSURFACE WATER CONDITIONS INDICATE A POTENTIAL FOR PERMANENT GROUND DISPLACEMENTS SUCH THAT MITIGATION AS DEFINED BY PUBLIC RESOURCES CODE SECTION 2693(C) WOULD BE REQUIRED.
🟩	U.S. FOREST SERVICE LAND

N

APPROXIMATE SCALE

0 5 10 20 MILES

NOTE: ALL DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

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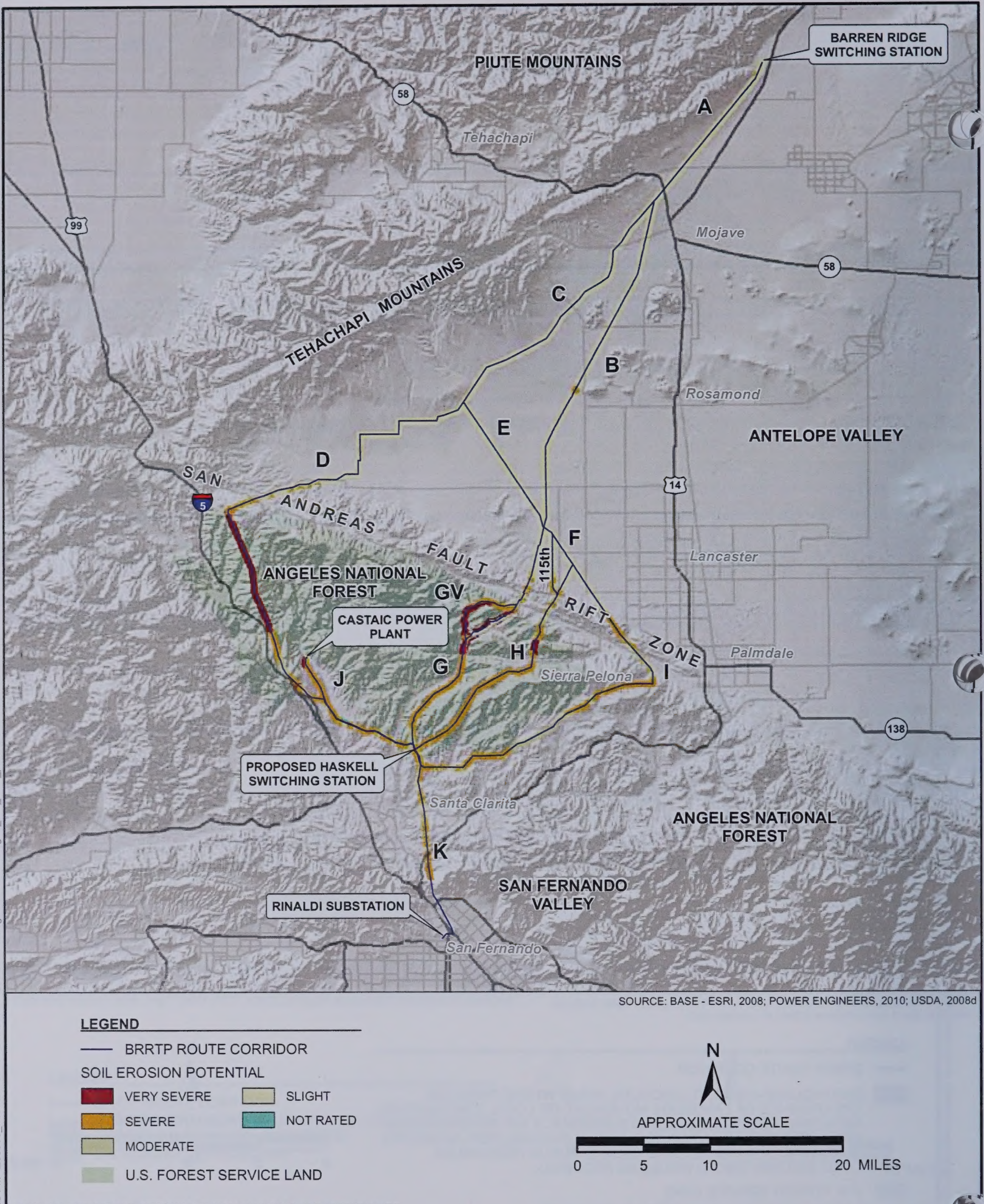
Ninyo & Moore	EARTHQUAKE - INDUCED LANDSLIDE HAZARD ZONES MAP	FIGURE
PROJECT NO. / DATE	BARREN RIDGE RENEWABLE TRANSMISSION PROJECT LOS ANGELES AND KERN COUNTIES, CALIFORNIA	9
207014002 / 5/10		


BARREN RIDGE SWITCHING STATION
PIUTE MOUNTAINS
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A
Tehachapi
99
Mojave
58
TEHACHAPI MOUNTAINS
C
B
Rosamond
ANTELOPE VALLEY
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D
SAN ANDREAS FAULT RIFT ZONE
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Lancaster
115th
ANGELES NATIONAL FOREST
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CASTAIC POWER PLANT
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Palmdale
J
G
Sierra Pelona
I
138
PROPOSED HASKELL SWITCHING STATION
Santa Clarita
ANGELES NATIONAL FOREST
K
SAN FERNANDO VALLEY
RINALDI SUBSTATION
San Fernando
LEGEND
BRRTP ROUTE CORRIDOR
SOIL EROSION POTENTIAL
VERY SEVERE
SEVERE
MODERATE
SLIGHT
NOT RATED
U.S. FOREST SERVICE LAND
N
APPROXIMATE SCALE
0
5
10
20 MILES

SOURCE: BASE - ESRI, 2008; POWER ENGINEERS, 2010; USDA, 2008d

NOTE: ALL DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

Ninyo & Moore

SOIL EROSION POTENTIAL MAP

PROJECT NO.	DATE
207014002	5/10

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
LOS ANGELES AND KERN COUNTIES, CALIFORNIA

FIGURE
10

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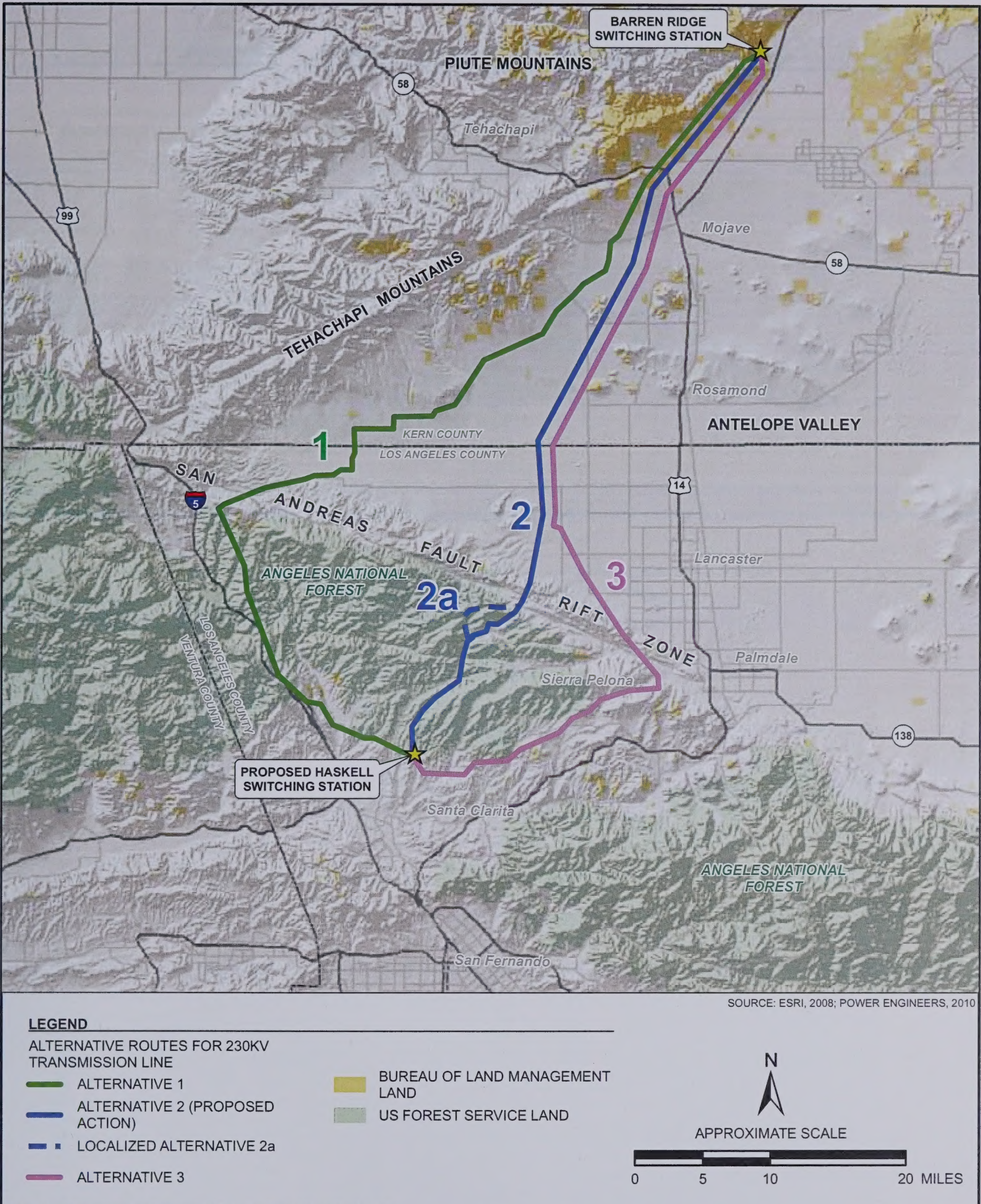
BARREN RIDGE SWITCHING STATION
PIUTE MOUNTAINS
58
Tehachapi
99
TEHACHAPI MOUNTAINS
Mojave
58
Rosamond
ANTELOPE VALLEY
1
KERN COUNTY
LOS ANGELES COUNTY
SAN ANDREAS FAULT RIFT ZONE
5
14
2
3
Lancaster
ANGELES NATIONAL FOREST
2a
Palmdale
Sierra Pelona
LOS ANGELES COUNTY
VENTURA COUNTY
138
PROPOSED HASKELL SWITCHING STATION
Santa Clarita
ANGELES NATIONAL FOREST
San Fernando
LEGEND
ALTERNATIVE ROUTES FOR 230KV TRANSMISSION LINE
ALTERNATIVE 1
ALTERNATIVE 2 (PROPOSED ACTION)
LOCALIZED ALTERNATIVE 2a
ALTERNATIVE 3
BUREAU OF LAND MANAGEMENT LAND
US FOREST SERVICE LAND
N
APPROXIMATE SCALE
0
5
10
20 MILES

SOURCE: ESRI, 2008; POWER ENGINEERS, 2010

NOTE: ALL DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

Ninyo & Moore		BRRTP PROPOSED PROJECT ALTERNATIVES	FIGURE
PROJECT NO.	DATE	BARREN RIDGE RENEWABLE TRANSMISSION PROJECT LOS ANGELES AND KERN COUNTIES, CALIFORNIA	11
207014002	5/10		

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APPENDIX A: IMPACT ASSESSMENT TABLES

TABLE A-1 – GEOLOGIC UNITS

Location			Feature	
Segment Corridor	**Mile From**	**Mile To**	**Geologic Symbol(s)**	**Geologic Unit(s)***
A	0.0	13.2	Q	Alluvium
B	0.0	26.5	Q	Alluvium
C	0.0	21.7	Q	Alluvium
D	0.0	16.7	Q	Alluvium
D	16.7	16.8	Mc, Q, Tv	Tertiary Non-Marine, Alluvium, Volcanic Rocks
D	16.8	17.4	Mc	Tertiary Non-Marine
D	17.4	17.8	Mc, Q	Tertiary Non-Marine, Alluvium
D	17.8	20.5	Mc	Tertiary Non-Marine
D	20.5	20.7	Mc, grMz	Tertiary Non-Marine, Granitic Rocks
D	20.7	22.7	grMz	Granitic Rocks
D	22.7	22.9	QPc, grMz	Plio-Pleistocene Non-Marine, Granitic Rocks
D	22.9	37.5	QPc	Plio-Pleistocene Non-Marine
D	37.5	42.0	M	Tertiary Marine
D	42.0	42.1	M, Q	Tertiary Marine, Alluvium
D	42.1	42.4	Q	Alluvium
D	42.4	42.5	M, Q	Tertiary Marine, Alluvium
D	42.5	47.5	M	Tertiary Marine
D	47.5	47.7	M, Mc	Tertiary Marine, Tertiary Non-Marine
D	47.7	48.0	Mc	Tertiary Non-Marine
D	48.0	48.2	M, Mc	Tertiary Marine, Tertiary Non-Marine
E	0.0	9.1	Q	Alluvium
E	9.1	9.2	Q, grMz	Alluvium, Granitic Rocks
E	9.2	9.8	grMz	Granitic Rocks
E	9.8	10.0	Q, grMz	Alluvium, Granitic Rocks
E	10.0	11.3	Q	Alluvium
F1	0.0	0.8	Q	Alluvium
F2	0.0	2.8	Q	Alluvium
115	0.0	3.7	Q	Alluvium
115	3.7	4.3	Q, grMz	Alluvium, Granitic Rocks
115	4.3	4.8	grMz	Granitic Rocks
G	0.0	4.2	Q	Alluvium
G	4.2	4.3	Q, grMz	Alluvium, Granitic Rocks
G	4.3	5.0	grMz	Granitic Rocks
G	5.0	5.1	grMz, sch	Granitic Rocks, Schist
G	5.1	5.5	sch	Schist
G	5.5	5.6	QPc, sch	Plio-Pleistocene Non-Marine, Schist
G	5.6	6.0	QPc	Plio-Pleistocene Non-Marine
G	6.0	6.1	Q, QPc	Alluvium, Plio-Pleistocene Non-Marine
G	6.1	6.4	Q	Alluvium
G	6.4	6.5	Q, grMz	Alluvium, Granitic Rocks
G	6.5	6.6	Q, grMz, pC	Alluvium, Granitic Rocks, Gneiss
G	6.6	12.3	pC	Gneiss
G	12.3	12.4	Ep, pC	Tertiary Marine, Gneiss
G	12.4	14.0	Ep	Tertiary Marine
G	14.0	14.2	Ep, Oc	Tertiary Marine, Tertiary Non-Marine
G	14.2	14.3	Oc	Tertiary Non-Marine
G	14.3	14.6	Oc, sch	Tertiary Non-Marine, Schist
G	14.6	19.5	sch	Schist
G	19.5	19.7	Mc, sch	Tertiary Non-Marine, Schist
G	19.7	21.0	Mc	Tertiary Non-Marine
G	21.0	21.2	M, Mc	Tertiary Marine, Tertiary Non-Marine
GV	0.0	0.1	Q	Alluvium
GV	0.1	0.2	grMz, Q	Alluvium, Granitic Rocks
GV	0.2	0.8	grMz	Granitic Rocks
GV	0.8	1.6	grMz, pC	Granitic Rocks, Gneiss
GV	1.6	2.2	grMz	Granitic Rocks
GV	2.2	2.5	grMz, pC	Granitic Rocks, Gneiss
GV	2.5	6.5	pC	Gneiss
H1	0.0	2.3	Q	Alluvium

TABLE A-1 – GEOLOGIC UNITS

Location			Feature	
Segment Corridor	**Mile From**	**Mile To**	**Geologic Symbol(s)**	**Geologic Unit(s)***
H1	2.3	2.4	Q, grMz	Alluvium, Granitic Rocks
H1	2.4	2.7	grMz	Granitic Rocks
H2	0.0	0.1	grMz	Granitic Rocks
H2	0.1	0.2	grMz, sch	Granitic Rocks, Schist
H2	0.2	1.1	sch	Schist
H2	1.1	1.3	QPc, sch	Plio-Pleistocene Non-Marine, Schist
H2	1.3	1.5	QPc	Plio-Pleistocene Non-Marine
H2	1.5	1.6	Q, QPc	Alluvium, Plio-Pleistocene Non-Marine
H2	1.6	2.1	Q	Alluvium
H2	2.1	2.2	Q, grMz	Alluvium, Granitic Rocks
H2	2.2	2.9	grMz	Granitic Rocks
H2	2.9	3.1	grMz, pC	Granitic Rocks, Gneiss
H2	3.1	3.9	pC	Gneiss
H2	3.9	4.0	grMz, pC	Granitic Rocks, Gneiss
H2	4.0	5.4	grMz	Granitic Rocks
H2	5.4	5.5	grMz, sch	Granitic Rocks, Schist
H2	5.5	16.0	sch	Schist
H2	16.0	16.2	Mc, sch	Tertiary Non-Marine, Schist
H2	16.2	17.0	Mc	Tertiary Non-Marine
H2	17.0	17.1	M, Mc	Tertiary Marine, Tertiary Non-Marine
I	0.0	4.4	Q	Alluvium
I	4.4	4.6	Q, grMz	Alluvium, Granitic Rocks
I	4.6	5.2	grMz	Granitic Rocks
I	5.2	5.4	grMz, sch	Granitic Rocks, Schist
I	5.4	7.7	sch	Schist
I	7.7	8.1	QPc, sch	Plio-Pleistocene Non-Marine, Schist
I	8.1	8.6	QPc	Plio-Pleistocene Non-Marine
I	8.6	9.0	QPc, sch	Plio-Pleistocene Non-Marine, Schist
I	9.0	9.2	sch	Schist
I	9.2	9.4	Q, sch	Alluvium, Schist
I	9.4	10.6	Q	Alluvium
I	10.6	10.7	Q, sch	Alluvium, Schist
I	10.7	18.2	sch	Schist
I	18.2	18.4	gr-m, sch	Granitic and Metamorphic Rocks, Schist
I	18.4	21.0	gr-m	Granitic and Metamorphic Rocks
I	21.0	21.2	gr-m, pC	Granitic and Metamorphic Rocks, Gneiss
I	21.2	24.5	pC	Gneiss
I	24.5	24.6	Mc, pC	Tertiary Non-Marine, Gneiss
I	24.6	27.8	Mc	Tertiary Non-Marine
I	27.8	27.9	Mc, Q	Tertiary Non-Marine, Alluvium
I	27.9	28.6	Q	Alluvium
I	28.6	28.7	Mc, Q	Tertiary Non-Marine, Alluvium
I	28.7	29.6	Mc	Tertiary Non-Marine
I	29.6	29.7	M, Mc	Tertiary Marine, Tertiary Non-Marine
I	29.7	30.8	M	Tertiary Marine
I	30.8	31.5	M, Mc	Tertiary Marine, Tertiary Non-Marine
I	31.5	31.8	M	Tertiary Marine
I	31.8	31.9	M, Mc	Tertiary Marine, Tertiary Non-Marine
J	0.0	0.1	M, Mc	Tertiary Marine, Tertiary Non-Marine
J	0.1	0.5	Mc	Tertiary Non-Marine
J	0.5	0.7	M, Mc	Tertiary Marine, Tertiary Non-Marine
J	0.7	1.1	M	Tertiary Marine
J	1.1	1.3	M, water	Tertiary Marine
J	1.3	5.7	M	Tertiary Marine
J	5.7	5.8	M, Q	Tertiary Marine, Alluvium
J	5.8	6.1	Q	Alluvium
J	6.1	6.2	M, Q	Tertiary Marine, Alluvium
J	6.2	12.0	M	Tertiary Marine
K	0.0	0.6	M, Mc	Tertiary Marine, Tertiary Non-Marine

TABLE A-1 – GEOLOGIC UNITS

Location			Feature	
Segment Corridor	**Mile From**	**Mile To**	**Geologic Symbol(s)**	**Geologic Unit(s)***
K	0.6	0.9	Mc	Tertiary Non-Marine
K	0.9	1.0	M, Mc	Tertiary Marine, Tertiary Non-Marine
K	1.0	1.9	M	Tertiary Marine
K	1.9	2.0	M, QPc	Tertiary Marine, Plio-Pleistocene Non-Marine
K	2.0	2.6	QPc	Plio-Pleistocene Non-Marine
K	2.6	2.8	Q, QPc	Alluvium, Plio-Pleistocene Non-Marine
K	2.8	3.1	Q	Alluvium
K	3.1	3.3	Q, QPc	Alluvium, Plio-Pleistocene Non-Marine
K	3.3	5.4	QPc	Plio-Pleistocene Non-Marine
K	5.4	5.6	Mc, QPc	Tertiary Non-Marine, Plio-Pleistocene Non-Marine
K	5.6	5.7	Mc, P, QPc	Tertiary Non-Marine, Tertiary Marine, Plio-Pleistocene Non-Marine
K	5.7	6.3	P	Tertiary Marine
K	6.3	6.5	P, QPc	Tertiary Marine, Plio-Pleistocene Non-Marine
K	6.5	8.6	QPc	Plio-Pleistocene Non-Marine
K	8.6	8.7	P, QPc	Tertiary Marine, Plio-Pleistocene Non-Marine
K	8.7	10.7	P	Tertiary Marine
K	10.7	11.1	P, gr-m	Tertiary Marine, Granitic and Metamorphic Rocks
K	11.1	11.2	P, QPc, gr-m	Tertiary Marine, Plio-Pleistocene Non-Marine Granitic and Metamorphic Rocks
K	11.2	11.3	P, QPc	Tertiary Marine, Plio-Pleistocene Non-Marine
K	11.3	11.8	QPc	Plio-Pleistocene Non-Marine
K	11.8	11.9	Q, QPc	Alluvium, Plio-Pleistocene Non-Marine
K	11.9	13.7	Q	Alluvium
K	13.7	15.4	QPc, Mc, M	Plio-Pleistocene Non-Marine, Tertiary Non-Marine, Tertiary Marine,
K	15.4	15.4	Q	Alluvium

Notes:
* See Table 3 in the report for general description of Geologic Unit.

TABLE A-2 – IMPACT ASSESSMENT TABLE
Geologic Feature: Distinctive Geologic Features

Location			Feature		Impact	
Segment Corridor	**Mile From**	**Mile To**	**Geological Unit**	**Sensitivity Rating**	**Initial**	**Residual**
A	0.0	13.2	Q	L	L	L
B	0.0	26.5	Q	L	L	L
C	0.0	21.7	Q	L	L	L
D	0.0	16.7	Q	L	L	L
D	16.7	16.8	Mc, Q, Tv	M	M	L
D	16.8	17.4	Mc	M	M	L
D	17.4	17.8	Mc, Q	M	M	L
D	17.8	20.5	Mc	M	M	L
D	20.5	20.7	Mc, grMz	M	M	L
D	20.7	22.7	grMz	M	M	L
D	22.7	22.9	QPc, grMz	M	M	L
D	22.9	37.5	QPc	M	M	L
D	37.5	42.0	M	M	M	L
D	42.0	42.1	M, Q	M	M	L
D	42.1	42.4	Q	L	L	L
D	42.4	42.5	M, Q	M	M	L
D	42.5	47.5	M	M	M	L
D	47.5	47.7	M, Mc	M	M	L
D	47.7	48.0	Mc	M	M	L
D	48.0	48.2	M, Mc	M	M	L
E	0.0	9.1	Q	L	L	L
E	9.1	9.2	Q, grMz	M	M	L
E	9.2	9.8	grMz	M	M	L
E	9.8	10.0	Q, grMz	M	M	L
E	10.0	11.3	Q	L	L	L
F1	0.0	0.8	Q	L	L	L
F2	0.0	2.8	Q	L	L	L
115	0.0	3.7	Q	L	L	L
115	3.7	4.3	Q, grMz	M	M	L
115	4.3	4.8	grMz	M	M	L
G	0.0	4.2	Q	L	L	L
G	4.2	4.3	Q, grMz	M	M	L
G	4.3	5.0	grMz	M	M	L
G	5.0	5.1	grMz, sch	M	M	L
G	5.1	5.5	sch	M	M	L
G	5.5	5.6	QPc, sch	M	M	L
G	5.6	6.0	QPc	M	M	L
G	6.0	6.1	Q, QPc	M	M	L
G	6.1	6.4	Q	L	L	L
G	6.4	6.5	Q, grMz	M	M	L
G	6.5	6.6	Q, grMz, pC	M	M	L
G	6.6	12.3	pC	M	M	L
G	12.3	12.4	Ep, pC	M	M	L
G	12.4	14.0	Ep	M	M	L
G	14.0	14.2	Ep, O	M	M	L

TABLE A-2 – IMPACT ASSESSMENT TABLE
Geologic Feature: Distinctive Geologic Features

Location			Feature		Impact	
Segment Corridor	Mile From	Mile To	Geological Unit	Sensitivity Rating	Initial	Residual
G	14.2	14.3	O	M	M	L
G	14.3	14.6	O, sch	M	M	L
G	14.6	19.5	sch	M	M	L
G	19.5	19.7	Mc, sch	M	M	L
G	19.7	21.0	Mc	M	M	L
G	21.0	21.2	M, Mc	M	M	L
GV	0.0	0.1	Q	L	L	L
GV	0.1	0.2	grMz, Q	M	M	L
GV	0.2	0.8	grMz	M	M	L
GV	0.8	1.6	grMz, pC	M	M	L
GV	1.6	2.2	grMz	M	M	L
GV	2.2	2.5	grMz, pC	M	M	L
GV	2.5	6.5	pC	M	M	L
H1	0.0	2.3	Q	L	L	L
H1	2.3	2.4	Q, grMz	M	M	L
H1	2.4	2.7	grMz	M	M	L
H2	0.0	0.1	grMz	M	M	L
H2	0.1	0.2	grMz, sch	M	M	L
H2	0.2	1.1	sch	M	M	L
H2	1.1	1.3	QPc, sch	M	M	L
H2	1.3	1.5	QPc	M	M	L
H2	1.5	1.6	Q, QPc	M	M	L
H2	1.6	2.1	Q	L	L	L
H2	2.1	2.2	Q, grMz	M	M	L
H2	2.2	2.9	grMz	M	M	L
H2	2.9	3.1	grMz, pC	M	M	L
H2	3.1	3.9	pC	M	M	L
H2	3.9	4.0	grMz, pC	M	M	L
H2	4.0	5.4	grMz	M	M	L
H2	5.4	5.5	grMz, sch	M	M	L
H2	5.5	16.0	sch	M	M	L
H2	16.0	16.2	Mc, sch	M	M	L
H2	16.2	17.0	Mc	M	M	L
H2	17.0	17.1	M, Mc	M	M	L
I	0.0	4.4	Q	L	L	L
I	4.4	4.6	Q, grMz	M	M	L
I	4.6	5.2	grMz	M	M	L
I	5.2	5.4	grMz, sch	M	M	L
I	5.4	7.7	sch	M	M	L
I	7.7	8.1	QPc, sch	M	M	L
I	8.1	8.6	QPc	M	M	L
I	8.6	9.0	QPc, sch	M	M	L
I	9.0	9.2	sch	M	M	L
I	9.2	9.4	Q, sch	M	M	L

TABLE A-2 – IMPACT ASSESSMENT TABLE
Geologic Feature: Distinctive Geologic Features

Location			Feature		Impact	
Segment Corridor	Mile From	Mile To	Geological Unit	Sensitivity Rating	Initial	Residual
I	9.4	10.6	Q	L	L	L
I	10.6	10.7	Q, sch	M	M	L
I	10.7	18.2	sch	M	M	L
I	18.2	18.4	gr-m, sch	M	M	L
I	18.4	21.0	gr-m	M	M	L
I	21.0	21.2	gr-m, pC	M	M	L
I	21.2	24.5	pC	M	M	L
I	24.5	24.6	Mc, pC	M	M	L
I	24.6	27.0	Mc	M	M	L
I	27.0	27.1	Mc	H	H	L
I	27.1	27.8	Mc	M	M	L
I	27.8	27.9	Mc, Q	M	M	L
I	27.9	28.6	Q	L	L	L
I	28.6	28.7	Mc, Q	H	H	L
I	28.7	29.6	Mc	H	H	L
I	29.6	29.7	M, Mc	M	M	L
I	29.7	30.8	M	M	M	L
I	30.8	31.5	M, Mc	M	M	L
I	31.5	31.8	M	M	M	L
I	31.8	31.9	M, Mc	M	M	L
J	0.0	0.1	M, Mc	M	M	L
J	0.1	0.5	Mc	M	M	L
J	0.5	0.7	M, Mc	M	M	L
J	0.7	1.1	M	M	M	L
J	1.1	1.3	M, water	M	M	L
J	1.3	5.7	M	M	M	L
J	5.7	5.8	M, Q	M	M	L
J	5.8	6.1	Q	L	L	L
J	6.1	6.2	M, Q	M	M	L
J	6.2	12.0	M	M	M	L
K	0.0	0.6	M, Mc	M	M	L
K	0.6	0.9	Mc	M	M	L
K	0.9	1.0	M, Mc	M	M	L
K	1.0	1.9	M	M	M	L
K	1.9	2.0	M, QPc	M	M	L
K	2.0	2.6	QPc	M	M	L
K	2.6	2.8	Q, QPc	M	M	L
K	2.8	3.1	Q	L	L	L
K	3.1	3.3	Q, QPc	M	M	L
K	3.3	5.4	QPc	M	M	L
K	5.4	5.6	Mc, QPc	M	M	L
K	5.6	5.7	Mc, P, QPc	M	M	L
K	5.7	6.3	P	M	M	L
K	6.3	6.5	P, QPc	M	M	L

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TABLE A-2 – IMPACT ASSESSMENT TABLE

Geologic Feature: Distinctive Geologic Features

Location			Feature		Impact	
Segment Corridor	**Mile From**	**Mile To**	**Geological Unit**	**Sensitivity Rating**	**Initial**	**Residual**
K	6.5	8.6	QPc	M	M	L
K	8.6	8.7	P, QPc	M	M	L
K	8.7	10.7	P	M	M	L
K	10.7	11.1	P, gr-m	M	M	L
K	11.1	11.2	P, QPc, gr-m	M	M	L
K	11.2	11.3	P, QPc	M	M	L
K	11.3	11.8	QPc	M	M	L
K	11.8	11.9	Q, QPc	M	M	L
K	11.9	13.7	Q	L	L	L
K	13.7	15.4	QPc, Mc, M	M	M	L
K	15.4	15.4	Q	L	L	L

Notes:
L – Low
M – Moderate
H – High

TABLE A-3 – IMPACT ASSESSMENT TABLE

Geologic Feature: Faults

Location			Feature	Impact	
Segment Corridor	Mile From	Mile To	Fault	Initial	Residual
A	0.0	0.6	No	No	No
A	0.6	0.9	Yes	H	L
A	0.9	13.2	No	H	No
B	0.0	12.2	No	No	No
B	12.2	12.4	Yes	M	L
B	12.4	15.8	No	No	No
B	15.8	15.9	Yes	M	L
B	15.9	16.3	No	No	No
B	16.3	16.4	Yes	M	L
B	16.4	16.6	No	No	No
B	16.6	16.7	Yes	M	L
B	16.7	26.5	No	No	No
C	0.0	21.7	No	No	No
D	0.0	16.7	No	No	No
D	16.7	16.8	Yes	M	L
D	16.8	20.5	No	No	No
D	20.5	20.7	Yes	H	L
D	20.7	22.7	No	No	No
D	22.7	22.9	Yes	M	L
D	22.9	23.3	No	No	No
D	23.3	23.4	Yes	M	L
D	23.4	28.0	No	No	No
D	28.0	28.2	Yes	M	L
D	28.2	48.2	No	No	No
E	0.0	11.3	No	No	No
F	0.0	3.6	No	No	No
115	0.0	4.8	No	No	No
G	0.0	5.0	No	No	No
G	5.0	5.1	Yes	H	L
G	5.1	5.5	No	No	No
G	5.5	5.6	Yes	H	L
G	5.6	6.0	No	No	No
G	6.0	6.1	Yes	H	L
G	6.1	6.5	No	No	No
G	6.5	6.6	Yes	H	L
G	6.6	12.3	No	No	No
G	12.3	12.4	Yes	M	L
G	12.4	12.6	No	No	No
G	12.6	12.8	Yes	M	L
G	12.8	13.7	No	No	No
G	13.7	13.8	Yes	M	L
G	13.8	14.0	No	No	No
G	14.0	14.2	Yes	M	L
G	14.2	14.3	No	No	No
G	14.3	14.6	Yes	M	L
G	14.6	19.5	No	No	No
G	19.5	19.6	Yes	M	L

TABLE A-3 – IMPACT ASSESSMENT TABLE
Geologic Feature: Faults

Location			Feature	Impact	
Segment Corridor	**Mile From**	**Mile To**	**Fault**	**Initial**	**Residual**
G	19.6	21.2	No	No	No
GV	0.0	0.8	No	No	No
GV	0.8	1.6	Yes	M	L
GV	1.6	2.2	No	No	No
GV	2.2	2.5	Yes	M	L
GV	2.5	6.5	No	No	No
H	0.0	2.8	No	No	No
H	2.8	2.9	Yes	H	L
H	2.9	3.9	No	No	No
H	3.9	4.0	Yes	H	L
H	4.0	4.2	No	No	No
H	4.2	4.3	Yes	H	L
H	4.3	4.7	No	No	No
H	4.7	4.8	Yes	H	L
H	4.8	6.6	No	No	No
H	6.6	6.7	Yes	H	L
H	6.7	8.1	No	No	No
H	8.1	8.2	Yes	M	L
H	8.2	19.8	No	No	No
I	0.0	5.2	No	No	No
I	5.2	5.4	Yes	H	L
I	5.4	7.9	No	No	No
I	7.9	8.1	Yes	H	L
I	8.1	8.6	No	No	No
I	8.6	9.0	Yes	H	L
I	9.0	18.2	No	No	No
I	18.2	18.4	Yes	M	L
I	18.4	26.4	No	No	No
I	26.4	26.6	Yes	M	L
I	26.6	31.9	No	No	No
J	0.0	12.0	No	No	No
K	0.0	6.3	No	No	No
K	6.3	6.5	Yes	M	L
K	6.5	9.6	No	No	No
K	9.6	10.0	Yes	M	L
K	10.0	10.7	No	No	No
K	10.7	10.9	Yes	M	L
K	10.9	11.0	No	No	No
K	11.1	11.3	Yes	H	L
K	11.3	14.3	No	No	No
K	14.3	14.4	Yes	H	L
K	14.4	15.4	No	No	No

Notes:
L – Low
M – Moderate
H – High
No – No impact

TABLE A-4 – IMPACT ASSESSMENT TABLE
Geologic Feature: Earthquake Fault Zones

Location			Feature	Impact	
Segment Corridor	**Mile From**	**Mile To**	**Earthquake Fault Zone**	**Initial**	**Residual**
A	0.0	0.6	No	No	No
A	0.6	2.0	Yes	H	L
A	2.0	13.2	No	No	No
B	0.0	26.5	No	No	No
C	0.0	21.7	No	No	No
D	0.0	20.2	No	No	No
D	20.2	21.7	Yes	H	L
D	21.7	48.2	No	No	No
E	0.0	11.3	No	No	No
F	0.0	3.6	No	No	No
115	0.0	4.8	No	No	No
G	0.0	5.3	No	No	No
G	5.3	6.2	Yes	H	L
G	6.2	21.2	No	No	No
GV	0.0	6.5	No	No	No
H	0.0	3.8	No	No	No
H	3.8	4.6	Yes	H	L
H	4.6	19.8	No	No	No
I	0.0	7.6	No	No	No
I	7.6	9.1	Yes	H	L
I	9.1	31.9	No	No	No
J	0.0	12.0	No	No	No
K	0.0	11.0	No	No	No
K	11.0	11.7	Yes	H	L
K	11.7	13.7	No	No	No
K	13.7	15.4	Yes	H	L

Notes:
L – Low
M – Moderate
H – High
No – No impact

TABLE A-5 – IMPACT ASSESSMENT TABLE
Geologic Feature: Ground Shaking (PGA)

Location			Feature	Impact	
Segment Corridor	Mile From	Mile To	Ground Shaking (PGA)	Initial	Residual
A	0.0	13.2	30	M	L
B	0.0	8.0	30	M	L
B	8.0	10.7	25	L	L
B	10.7	21.7	30	M	L
B	21.7	26.5	40	M	L
C	0.0	21.7	30	M	L
D	0.0	0.4	30	M	L
D	0.4	13.1	40	M	L
D	13.1	26.5	60	H	L
D	26.5	48.2	40	M	L
E	0.0	11.3	30	M	L
F	0.0	3.1	40	M	L
F	3.1	3.6	60	H	L
115	0.0	1.4	40	M	L
115	1.4	4.8	60	H	L
G	0.0	1.5	40	M	L
G	1.5	5.5	60	H	L
G	5.5	6.5	80	H	L
G	6.5	11.5	60	H	L
G	11.5	21.2	40	M	L
GV	0.0	1.0	80	H	L
GV	1.0	6.5	60	H	L
H	0.0	9.3	60	H	L
H	9.3	19.8	40	M	L
I	0.0	7.0	60	H	L
I	7.0	8.1	80	H	L
I	8.1	16.1	60	H	L
I	16.1	31.9	40	M	L
J	0.0	12.0	40	M	L
K	0.0	2.7	40	M	L
K	2.7	7.3	60	H	L
K	7.3	15.4	80	H	L

Notes:
L – Low
M – Moderate
H – High

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TABLE A-6 – IMPACT ASSESSMENT TABLE
Geologic Feature: Liquefaction Zones

Location			Feature	Impact	
Segment Corridor	Mile From	Mile To	Liquefaction Zone	Initial	Residual
A	0.0	13.2	No	L	L
B	0.0	26.5	No	L	L
C	0.0	21.7	No	L	L
D	0.0	46.0	No	L	L
D	46.0	46.6	Yes	H	L
D	46.6	46.8	No	L	L
D	46.8	47.4	Yes	H	L
D	47.4	48.2	No	L	L
E	0.0	11.3	No	L	L
F	0.0	3.6	No	L	L
115	0.0	4.1	No	L	L
115	4.1	4.8	Yes	H	L
G	0.0	1.3	No	L	L
G	1.3	1.4	Yes	H	L
G	1.4	1.5	No	L	L
G	1.5	2.2	No	L	L
G	2.2	2.4	Yes	H	L
G	2.4	3.5	No	L	L
G	3.5	3.7	Yes	H	L
G	3.7	4.8	No	L	L
G	4.8	5.7	Yes	H	L
G	5.7	5.8	No	L	L
G	5.8	6.3	Yes	H	L
G	6.3	21.2	No	L	L
GV	0.0	6.5	No	L	L
H	0.0	2.4	No	L	L
H	2.4	2.9	Yes	H	L
H	2.9	3.3	No	L	L
H	3.3	3.8	Yes	H	L
H	3.8	4.2	No	L	L
H	4.2	4.6	Yes	H	L
H	4.6	7.8	No	L	L
H	7.8	8.0	Yes	H	L
H	8.1	18.3	No	L	L
H	18.3	18.5	Yes	H	L
H	18.5	18.8	No	L	L
H	18.8	19.0	Yes	H	L
H	19.0	19.3	No	L	L
H	19.3	19.7	Yes	H	L
H	19.7	19.8	No	L	L
I	0.0	4.6	No	L	L
I	4.6	4.7	Yes	H	L
I	4.7	6.6	No	L	L
I	6.6	6.9	Yes	H	L
I	6.9	7.3	No	L	L
I	7.3	8.3	Yes	H	L
I	8.3	8.5	No	L	L

TABLE A-6 – IMPACT ASSESSMENT TABLE
Geologic Feature: Liquefaction Zones

Location			Feature	Impact	
Segment Corridor	Mile From	Mile To	Liquefaction Zone	Initial	Residual
I	8.5	10.7	Yes	H	L
I	10.7	12.5	No	L	L
I	12.5	12.7	Yes	H	L
I	12.7	15.7	No	L	L
I	15.7	16.1	Yes	H	L
I	16.1	23.0	No	L	L
I	23.0	23.4	Yes	H	L
I	23.4	25.3	No	L	L
I	25.3	26.4	Yes	H	L
I	26.4	26.7	No	L	L
I	26.7	27.1	Yes	H	L
I	27.1	27.2	No	L	L
I	27.2	29.9	Yes	H	L
I	29.9	30.0	No	L	L
I	30.0	30.2	Yes	H	L
I	30.2	30.3	No	L	L
I	30.3	31.7	Yes	H	L
I	31.7	31.9	No	L	L
J	0.0	0.8	No	L	L
J	0.8	1.4	Yes	H	L
J	1.4	1.7	No	L	L
J	1.7	2.2	Yes	H	L
J	2.2	12.0	No	L	L
K	0.0	0.2	No	L	L
K	0.2	2.5	Yes	H	L
K	2.5	2.6	No	L	L
K	2.6	3.4	Yes	H	L
K	3.4	3.7	No	L	L
K	3.7	6.0	Yes	H	L
K	6.0	6.7	No	L	L
K	6.7	6.9	Yes	H	L
K	6.9	7.0	No	L	L
K	7.0	7.1	Yes	H	L
K	7.1	7.5	No	L	L
K	7.5	7.9	Yes	H	L
K	7.9	8.4	No	L	L
K	8.4	8.6	Yes	H	L
K	8.6	8.7	No	L	L
K	8.7	11.9	No	L	L
K	11.9	13.5	Yes	H	L
K	13.5	14.4	No	L	L
K	14.4	14.5	Yes	H	L
K	14.5	15.3	No	L	L
K	15.3	15.4	Yes	H	L

Notes:
L – Low
M – Moderate
H – High

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TABLE A-7 – IMPACT ASSESSMENT TABLE
Geologic Feature: Earthquake-Induced Landslide Zones

Location			Feature	Impact	
Segment Corridor	Mile From	Mile To	EQ-Induced Landslide Zone	Initial	Residual
A	0.0	13.2	No	L	L
B	0.0	26.5	No	L	L
C	0.0	21.7	No	L	L
D	0.0	34.7	No	L	L
D	34.7	38.4	Yes	H	L
D	38.4	38.5	No	H	L
D	38.5	40.8	Yes	H	L
D	40.8	45.6	No	L	L
D	45.6	48.2	Yes	H	L
E	0.0	11.3	No	L	L
F	0.0	3.6	No	L	L
115	0.0	4.3	No	L	L
115	4.3	4.4	Yes	H	L
115	4.4	4.8	No	L	L
G	0.0	4.0	No	L	L
G	4.0	4.2	Yes	H	L
G	4.2	4.3	No	L	L
G	4.3	4.7	Yes	H	L
G	4.7	4.9	No	L	L
G	4.9	5.1	Yes	H	L
G	5.1	5.6	No	L	L
G	5.6	5.8	Yes	H	L
G	5.8	6.8	No	L	L
G	6.8	7.7	Yes	H	L
G	7.7	20.5	No	L	L
G	20.5	21.2	Yes	H	L
GV	0.0	1.0	No	L	L
GV	1.0	1.3	Yes	H	L
GV	1.3	1.5	No	L	L
GV	1.5	1.7	Yes	H	L
GV	1.7	1.9	No	L	L
GV	1.9	2.0	Yes	H	L
GV	2.0	6.5	No	L	L
H	0.0	2.5	No	L	L
H	2.5	2.6	Yes	H	L
H	2.6	2.8	No	L	L
H	2.8	3.2	Yes	H	L
H	3.2	3.5	No	L	L
H	3.5	3.6	Yes	H	L
H	3.6	3.8	No	L	L
H	3.8	4.3	Yes	H	L
H	4.3	5.1	No	L	L
H	5.1	5.3	Yes	H	L
H	5.3	5.6	No	L	L
H	5.6	5.9	Yes	H	L

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TABLE A-7 – IMPACT ASSESSMENT TABLE
Geologic Feature: Earthquake-Induced Landslide Zones

Location			Feature	Impact	
Segment Corridor	Mile From	Mile To	EQ-Induced Landslide Zone	Initial	Residual
H	5.9	7.3	No	L	L
H	7.3	7.7	Yes	H	L
H	7.7	8.0	No	L	L
H	8.0	8.9	Yes	H	L
H	8.9	17.9	No	L	L
H	17.9	19.8	Yes	H	L
I	0.0	5.0	No	L	L
I	5.0	5.9	Yes	H	L
I	5.9	6.4	No	L	L
I	6.4	6.8	Yes	H	L
I	6.8	7.0	No	L	L
I	7.0	7.5	Yes	H	L
I	7.5	8.8	No	L	L
I	8.8	8.9	Yes	H	L
I	8.9	10.9	No	L	L
I	10.9	11.3	Yes	H	L
I	11.3	11.4	No	L	L
I	11.4	11.6	Yes	H	L
I	11.6	11.8	No	L	L
I	11.8	13.7	Yes	H	L
I	13.7	13.8	No	L	L
I	13.8	14.8	Yes	H	L
I	14.8	15.0	No	L	L
I	15.0	15.7	Yes	H	L
I	15.7	16.2	No	L	L
I	16.2	17.8	Yes	H	L
I	17.8	19.1	No	L	L
I	19.1	27.4	Yes	H	L
I	27.4	28.5	No	L	L
I	28.5	29.0	Yes	H	L
I	29.0	29.2	No	L	L
I	29.2	29.3	Yes	H	L
I	29.3	29.4	No	L	L
I	29.4	30.9	Yes	H	L
I	30.9	31.2	No	L	L
I	31.2	31.9	Yes	H	L
J	0.0	1.9	Yes	H	L
J	1.9	2.0	No	L	L
J	2.0	2.6	Yes	H	L
J	2.6	7.4	No	L	L
J	7.4	7.9	Yes	H	L
J	7.9	8.0	No	L	L
J	8.0	12.0	Yes	H	L
K	0.0	0.7	Yes	H	L

TABLE A-7 – IMPACT ASSESSMENT TABLE
Geologic Feature: Earthquake-Induced Landslide Zones

Location			Feature	Impact	
Segment Corridor	Mile From	Mile To	EQ-Induced Landslide Zone	Initial	Residual
K	0.7	0.9	No	L	L
K	0.9	2.0	Yes	H	L
K	2.0	2.1	No	L	L
K	2.1	2.8	Yes	H	L
K	2.8	3.2	No	L	L
K	3.2	4.1	Yes	H	L
K	4.1	4.3	No	L	L
K	4.3	4.4	Yes	H	L
K	4.4	5.0	No	L	L
K	5.0	5.1	Yes	H	L
K	5.1	5.5	No	L	L
K	5.5	6.5	Yes	H	L
K	6.5	6.6	No	L	L
K	6.6	7.6	Yes	H	L
K	7.6	7.9	No	L	L
K	7.9	8.2	Yes	H	L
K	8.2	8.3	No	L	L
K	8.3	8.4	Yes	H	L
K	8.4	8.6	No	L	L
K	8.6	10.2	Yes	H	L
K	10.2	10.3	No	L	L
K	10.3	11.2	Yes	H	L
K	11.2	13.8	No	L	L
K	13.8	14.0	Yes	H	L
K	14.0	14.2	No	L	L
K	14.2	14.4	Yes	H	L
K	14.4	14.7	No	L	L
K	14.7	15.3	Yes	H	L
K	15.3	15.4	No	L	L

Notes:
L – Low
M – Moderate
H – High

TABLE A-8 – IMPACT ASSESSMENT TABLE
Geologic Feature: Mapped Landslides

Location			Feature	Impact	
Segment Corridor	Mile From	Mile To	Mapped Landslide	Initial	Residual
A	0.0	13.2	No	L	L
B	0.0	26.5	No	L	L
C	0.0	21.7	No	L	L
D	0.0	34.9	No	L	L
D	34.9	35.0	Yes	H	L
D	35.0	35.1	No	L	L
D	35.1	35.6	Yes	H	L
D	35.6	35.8	No	L	L
D	35.8	35.9	Yes	H	L
D	35.9	36.1	No	L	L
D	36.1	36.5	Yes	H	L
D	36.5	36.7	No	L	L
D	36.7	37.0	Yes	H	L
D	37.0	37.2	No	L	L
D	37.2	37.7	Yes	H	L
D	37.7	37.8	No	L	L
D	37.8	38.0	Yes	H	L
D	38.0	38.1	No	L	L
D	38.1	38.9	Yes	H	L
D	38.9	39.0	No	L	L
D	39.0	39.1	Yes	H	L
D	39.1	39.2	No	L	L
D	39.2	40.7	Yes	H	L
D	40.7	42.4	No	L	L
D	42.4	42.6	Yes	H	L
D	42.6	45.7	No	L	L
D	45.7	46.2	Yes	H	L
D	46.2	46.3	No	L	L
D	46.3	47.0	Yes	H	L
D	47.0	47.1	No	L	L
D	47.1	47.4	Yes	H	L
D	47.4	47.7	No	L	L
D	47.7	48.1	Yes	H	L
D	48.1	48.2	No	L	L
E	0.0	11.3	No	L	L
F	0.0	3.6	No	L	L
115	0.0	4.8	No	L	L
G	0.0	20.8	No	L	L
G	20.8	21.0	Yes	H	L
G	21.0	21.2	No	L	L
GV	0.0	6.5	No	L	L
H	0.0	3.8	No	L	L
H	3.8	4.2	Yes	H	L
H	4.2	11.5	No	L	L
H	11.5	11.8	Yes	H	L

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TABLE A-8 – IMPACT ASSESSMENT TABLE
Geologic Feature: Mapped Landslides

Location			Feature	Impact	
Segment Corridor	Mile From	Mile To	Mapped Landslide	Initial	Residual
H	11.8	13.1	No	L	L
H	13.1	13.2	Yes	H	L
H	13.2	13.8	No	L	L
H	13.8	14.2	Yes	H	L
H	14.2	14.4	No	L	L
H	14.4	14.7	Yes	H	L
H	14.7	14.8	No	L	L
H	14.8	15.0	Yes	H	L
H	15.0	18.0	No	L	L
H	18.0	18.3	Yes	H	L
H	18.3	19.8	No	L	L
I	0.0	8.2	No	L	L
I	8.2	8.6	Yes	H	L
I	8.6	11.5	No	L	L
I	11.5	11.8	Yes	H	L
I	11.8	11.9	No	L	L
I	11.9	12.0	Yes	H	L
I	12.0	12.3	No	L	L
I	12.3	13.4	Yes	H	L
I	13.4	22.9	No	L	L
I	22.9	23.5	Yes	H	L
I	23.5	23.8	No	L	L
I	23.8	23.9	Yes	H	L
I	23.9	24.1	No	L	L
I	24.1	24.3	Yes	H	L
I	24.3	24.4	No	L	L
I	24.4	24.9	Yes	H	L
I	24.9	26.8	No	L	L
I	26.8	26.9	Yes	H	L
I	26.9	29.5	No	L	L
I	29.5	29.9	Yes	H	L
I	29.9	30.0	No	L	L
I	30.0	30.1	Yes	H	L
I	30.1	30.3	No	L	L
I	30.3	30.5	Yes	H	L
I	30.5	31.9	No	L	L
J	0.0	0.1	Yes	H	L
J	0.1	0.3	No	L	L
J	0.3	0.5	Yes	H	L
J	0.5	0.8	No	L	L
J	0.8	1.1	Yes	H	L
J	1.1	1.2	No	L	L
J	1.2	1.9	Yes	H	L
J	1.9	2.0	No	L	L

TABLE A-8 – IMPACT ASSESSMENT TABLE
Geologic Feature: Mapped Landslides

Location			Feature	Impact	
Segment Corridor	**Mile From**	**Mile To**	**Mapped Landslide**	**Initial**	**Residual**
J	2.0	2.4	Yes	H	L
J	2.4	5.6	No	L	L
J	5.6	5.8	Yes	H	L
J	5.8	7.6	No	L	L
J	7.6	8.9	Yes	H	L
J	8.9	9.1	No	L	L
J	9.1	9.2	Yes	H	L
J	9.2	9.4	No	L	L
J	9.4	10.6	Yes	H	L
J	10.6	10.8	No	L	L
J	10.8	11.1	Yes	H	L
J	11.1	11.4	No	L	L
J	11.4	11.8	Yes	H	L
J	11.8	12.0	No	L	L
K	0.0	0.2	Yes	H	L
K	0.2	0.5	No	L	L
K	0.5	0.6	Yes	H	L
K	0.6	1.2	No	L	L
K	1.2	1.4	Yes	H	L
K	1.4	1.5	No	L	L
K	1.5	1.7	Yes	H	L
K	1.7	5.8	No	L	L
K	5.8	5.9	Yes	H	L
K	5.9	6.1	No	L	L
K	6.1	6.2	Yes	H	L
K	6.2	7.0	No	L	L
K	7.0	7.2	Yes	H	L
K	7.2	8.9	No	L	L
K	8.9	10.0	Yes	H	L
K	10.0	10.3	No	L	L
K	10.3	10.7	Yes	H	L
K	10.7	10.8	No	L	L
K	10.8	10.9	Yes	H	L
K	10.9	15.4	No	L	L

Notes:
L – Low
M – Moderate
H – High

TABLE A-9 – IMPACT ASSESSMENT TABLE
Geologic Feature: Erosion Potential

Location			Feature	Impact	
Segment Corridor	Mile From	Mile To	Erosion Potential	Initial	Residual
A	0.0	13.2	Slight	L	L
B	0.0	15.3	Slight	L	L
B	15.3	15.9	Severe	H	L
B	15.9	26.5	Slight	L	L
C	0.0	20.6	Slight	L	L
C	20.6	20.8	Moderate	M	L
C	20.8	21.7	Slight	L	L
D	0.0	0.6	Slight	L	L
D	0.6	0.8	Moderate	M	L
D	0.8	1.4	Slight	L	L
D	1.4	1.8	Moderate	M	L
D	1.8	1.9	Slight	L	L
D	1.9	2.4	Moderate	M	L
D	2.4	9.8	Slight	L	L
D	9.8	10.2	Moderate	M	L
D	10.2	10.3	Slight	L	L
D	10.3	10.9	Moderate	M	L
D	10.9	16.3	Slight	L	L
D	16.3	16.6	Severe	H	L
D	16.6	17.1	Slight	L	L
D	17.1	17.2	Severe	H	L
D	17.2	17.6	Slight	L	L
D	17.6	18.0	Severe	H	L
D	18.0	19.2	Slight	L	L
D	19.2	19.5	Severe	H	L
D	19.5	20.4	Slight	L	L
D	20.4	23.1	Severe	H	L
D	23.1	32.8	Very Severe	H	L
D	32.8	35.0	Severe	H	L
D	35.0	36.3	Moderate	M	L
D	36.3	37.2	Severe	H	L
D	37.2	37.4	Very Severe	H	L
D	37.4	37.9	Severe	H	L
D	37.9	38.5	Moderate	M	L
D	38.5	40.3	Severe	H	L
D	40.3	40.4	Moderate	M	L
D	40.4	42.1	Severe	H	L
D	42.1	42.3	Slight	L	L
D	42.3	43.0	Severe	H	L
D	43.0	43.1	Moderate	M	L
D	43.1	45.0	Severe	H	L
D	45.0	45.1	Moderate	M	L
D	45.1	46.2	Severe	H	L
D	46.2	46.3	Slight	L	L
D	46.3	47.5	Severe	H	L

TABLE A-9 – IMPACT ASSESSMENT TABLE
Geologic Feature: Erosion Potential

Location			Feature	Impact	
Segment Corridor	Mile From	Mile To	Erosion Potential	Initial	Residual
D	47.5	47.9	Moderate	M	L
D	47.9	48.2	Severe	H	L
E	0.0	9.2	Slight	L	L
E	9.2	9.7	Moderate	M	L
E	9.7	11.3	Slight	L	L
F	0.0	3.6	Slight	L	L
115	0.0	2.9	Slight	L	L
115	2.9	4.6	Severe	H	L
115	4.6	4.8	Moderate	M	L
G	0.0	1.5	Slight	L	L
G	1.5	1.7	Severe	H	L
G	1.7	3.5	Slight	L	L
G	3.5	3.6	Severe	H	L
G	3.6	3.8	Slight	L	L
G	3.8	4.3	Severe	H	L
G	4.3	4.6	Moderate	M	L
G	4.6	5.1	Severe	H	L
G	5.1	5.3	Moderate	M	L
G	5.3	5.5	Severe	H	L
G	5.5	5.6	Slight	L	L
G	5.6	6.1	Severe	H	L
G	6.1	6.4	Moderate	M	L
G	6.4	6.8	Severe	H	L
G	6.8	7.8	Very Severe	H	L
G	7.8	7.9	Slight	L	L
G	7.9	8.1	Very Severe	H	L
G	8.1	8.8	Slight	L	L
G	8.8	10.4	Very Severe	H	L
G	10.4	10.6	Slight	L	L
G	10.6	10.9	Very Severe	H	L
G	10.9	11.3	Severe	H	L
G	11.3	12.4	Very Severe	H	L
G	12.4	19.8	Severe	H	L
G	19.8	20.9	Moderate	M	L
G	20.9	21.2	Severe	H	L
GV	0.0	0.7	Moderate	M	L
GV	0.7	2.1	Severe	H	L
GV	2.1	2.4	Very Severe	H	L
GV	2.4	2.5	Severe	H	L
GV	2.5	2.7	Very Severe	H	L
GV	2.7	3.0	Severe	H	L
GV	3.0	6.0	Very Severe	H	L
GV	6.0	6.5	Severe	H	L
H	0.0	1.9	Slight	L	L

TABLE A-9 – IMPACT ASSESSMENT TABLE

Geologic Feature: Erosion Potential

Location			Feature	Impact	
Segment Corridor	Mile From	Mile To	Erosion Potential	Initial	Residual
H	1.9	2.6	Severe	H	L
H	2.6	3.1	Moderate	M	L
H	3.1	3.7	Severe	H	L
H	3.7	3.8	Slight	L	L
H	3.8	4.0	Moderate	M	L
H	4.0	4.2	Severe	H	L
H	4.2	4.3	Moderate	M	L
H	4.3	4.5	Slight	L	L
H	4.5	5.2	Moderate	M	L
H	5.2	6.4	Severe	H	L
H	6.4	7.4	Very Severe	H	L
H	7.4	7.9	Severe	H	L
H	7.9	8.0	Moderate	M	L
H	8.0	19.8	Severe	H	L
I	0.0	4.4	Slight	L	L
I	4.4	6.8	Severe	H	L
I	6.8	7.0	Moderate	M	L
I	7.0	8.0	Severe	H	L
I	8.0	8.7	Moderate	M	L
I	8.7	8.9	Severe	H	L
I	8.9	10.1	Moderate	M	L
I	10.1	10.3	Slight	L	L
I	10.3	10.5	Moderate	M	L
I	10.5	18.2	Severe	H	L
I	18.2	18.3	Moderate	M	L
I	18.3	18.5	Severe	H	L
I	18.5	23.1	Moderate	M	L
I	23.1	27.6	Severe	H	L
I	27.6	27.7	Slight	L	L
I	27.7	27.9	Severe	H	L
I	27.9	28.5	Slight	L	L
I	28.5	31.9	Severe	H	L
J	0.0	1.9	Severe	H	L
J	1.9	2.0	Slight	L	L
J	2.0	2.8	Severe	H	L
J	2.8	2.9	Moderate	M	L
J	2.9	3.0	Severe	H	L
J	3.0	3.2	Moderate	M	L
J	3.2	5.1	Severe	H	L
J	5.1	5.2	Moderate	M	L
J	5.2	5.9	Severe	H	L
J	5.9	6.1	Slight	L	L
J	6.1	12.0	Severe	H	L
K	0.0	2.6	Severe	H	L

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TABLE A-9 – IMPACT ASSESSMENT TABLE
Geologic Feature: Erosion Potential

Location			Feature	Impact	
Segment Corridor	**Mile From**	**Mile To**	**Erosion Potential**	**Initial**	**Residual**
K	2.6	2.9	Moderate	M	L
K	2.9	3.1	Slight	L	L
K	3.1	4.3	Severe	H	L
K	4.3	4.4	Moderate	M	L
K	4.4	4.9	Slight	L	L
K	4.9	5.1	Severe	H	L
K	5.1	5.2	Slight	L	L
K	5.2	7.5	Severe	H	L
K	7.5	7.6	Slight	L	L
K	7.6	10.1	Severe	H	L
K	10.1	15.4	No Data	N/A	N/A

Notes:
L – Low
M – Moderate
H – High
No – No impact
N/A – Not Applicable

TABLE A-10 – IMPACT ASSESSMENT TABLE
Geologic Feature: Linear Extensibility Percent

Location			Feature			Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Linear Extensibility Percent	Initial	Residual
A	0.0	0.6	104,	Arizo gravelly loamy sand	No Data	N/A	N/A
A	0.6	0.8	104,204,	Arizo gravelly loamy sand, Whitewolf loamy sand	No Data	N/A	N/A
A	0.8	0.9	104,	Arizo gravelly loamy sand	No Data	N/A	N/A
A	0.9	1.2	104,150,	Arizo gravelly loamy sand, Muroc sandy loam	No Data	N/A	N/A
A	1.2	1.4	150,	Muroc sandy loam	No Data	N/A	N/A
A	1.4	2.8	114,150,	Cajon loamy sand, Muroc sandy loam	No Data	N/A	N/A
A	2.8	3.0	104,114,	Arizo gravelly loamy sand, Cajon loamy sand	No Data	N/A	N/A
A	3.0	8.1	104,	Arizo gravelly loamy sand	No Data	N/A	N/A
A	8.1	8.3	104,114,	Arizo gravelly loamy sand, Cajon loamy sand	No Data	N/A	N/A
A	8.3	9.0	114,	Cajon loamy sand	No Data	N/A	N/A
A	9.0	9.1	104,114,	Arizo gravelly loamy sand, Cajon loamy sand	No Data	N/A	N/A
A	9.1	9.6	104,	Arizo gravelly loamy sand	No Data	N/A	N/A
A	9.6	10.1	104,116,	Arizo gravelly loamy sand, Cajon gravelly loamy sand	No Data	N/A	N/A
A	10.1	10.8	104,	Arizo gravelly loamy sand	No Data	N/A	N/A
A	10.8	10.9	104,116,	Arizo gravelly loamy sand, Cajon gravelly loamy sand	No Data	N/A	N/A
A	10.9	11.0	104,116,137,	Arizo gravelly loamy sand, Cajon gravelly loamy sand, Garlock loamy sand	No Data	N/A	N/A
A	11.0	11.2	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	No Data	N/A	N/A
A	11.2	11.3	137,	Garlock loamy sand	No Data	N/A	N/A
A	11.3	11.4	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	No Data	N/A	N/A
A	11.4	11.5	116,	Cajon gravelly loamy sand	No Data	N/A	N/A
A	11.5	11.6	104,116,	Arizo gravelly loamy sand, Cajon gravelly loamy sand	No Data	N/A	N/A
A	11.6	11.7	104,	Arizo gravelly loamy sand	No Data	N/A	N/A
A	11.7	11.8	104,137,	Arizo gravelly loamy sand, Garlock loamy sand	No Data	N/A	N/A
A	11.8	12.0	137,	Garlock loamy sand	No Data	N/A	N/A
A	12.0	12.6	114,137,	Cajon loamy sand, Garlock loamy sand	No Data	N/A	N/A
A	12.6	12.7	137,	Garlock loamy sand	No Data	N/A	N/A
A	12.7	12.8	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	No Data	N/A	N/A
A	12.8	13.1	116,	Cajon gravelly loamy sand	No Data	N/A	N/A
A	13.1	13.2	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	No Data	N/A	N/A
A	13.2	13.2	114,	Cajon loamy sand	No Data	N/A	N/A
B	0.0	0.2	114,	Cajon loamy sand	No Data	N/A	N/A
B	0.2	0.3	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	No Data	N/A	N/A
B	0.3	0.4	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	No Data	N/A	N/A
B	0.4	0.8	137,	Garlock loamy sand	No Data	N/A	N/A
B	0.8	1.1	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	No Data	N/A	N/A
B	1.1	1.3	116,	Cajon gravelly loamy sand	No Data	N/A	N/A
B	1.3	1.4	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	No Data	N/A	N/A
B	1.4	1.6	137,	Garlock loamy sand	No Data	N/A	N/A
B	1.6	1.7	114,116,137,	Cajon loamy sand, Cajon gravelly loamy sand, Garlock loamy sand	No Data	N/A	N/A
B	1.7	2.6	116,	Cajon gravelly loamy sand	No Data	N/A	N/A
B	2.6	2.9	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	No Data	N/A	N/A
B	2.9	3.3	114,	Cajon loamy sand	No Data	N/A	N/A
B	3.3	3.4	114,137,	Cajon loamy sand, Garlock loamy sand	No Data	N/A	N/A
B	3.4	3.5	137,	Garlock loamy sand	No Data	N/A	N/A
B	3.5	3.8	113,137,	Cajon sand, Garlock loamy sand	No Data	N/A	N/A
B	3.8	4.0	137,	Garlock loamy sand	No Data	N/A	N/A
B	4.0	4.2	113,137,	Cajon sand, Garlock loamy sand	No Data	N/A	N/A
B	4.2	4.3	113,	Cajon sand	No Data	N/A	N/A
B	4.3	4.5	113,137,	Cajon sand, Garlock loamy sand	No Data	N/A	N/A
B	4.5	4.6	113,116,	Cajon sand, Cajon gravelly loamy sand	No Data	N/A	N/A
B	4.6	4.7	116,	Cajon gravelly loamy sand	No Data	N/A	N/A
B	4.7	4.8	113,116,	Cajon gravelly loamy sand	No Data	N/A	N/A
B	4.8	5.3	113,	Cajon sand	No Data	N/A	N/A

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TABLE A-10 – IMPACT ASSESSMENT TABLE
Geologic Feature: Linear Extensibility Percent

Location			Feature			Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Linear Extensibility Percent	Initial	Residual
B	5.3	5.5	113,114,	Cajon sand, Cajon loamy sand	No Data	N/A	N/A
B	5.5	5.8	114,	Cajon loamy sand	No Data	N/A	N/A
B	5.8	6.0	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	No Data	N/A	N/A
B	6.0	6.2	116,	Cajon gravelly loamy sand	No Data	N/A	N/A
B	6.2	6.3	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	No Data	N/A	N/A
B	6.3	6.4	114,	Cajon loamy sand	No Data	N/A	N/A
B	6.4	6.5	114,137,	Cajon loamy sand, Garlock loamy sand	No Data	N/A	N/A
B	6.5	6.6	137,	Garlock loamy sand	No Data	N/A	N/A
B	6.6	7.2	114,137,	Cajon loamy sand, Garlock loamy sand	No Data	N/A	N/A
B	7.2	11.4	114,	Cajon loamy sand	No Data	N/A	N/A
B	11.4	11.5	114,171,	Cajon loamy sand, Rosamond clay loam	No Data	N/A	N/A
B	11.5	11.6	114,137,171,	Cajon loamy sand, Garlock loamy sand, Rosamond clay loam	No Data	N/A	N/A
B	11.6	11.8	137,	Garlock loamy sand	No Data	N/A	N/A
B	11.8	11.9	114,137,	Cajon loamy sand, Garlock loamy sand	No Data	N/A	N/A
B	11.9	12.0	114,137,171,	Cajon loamy sand, Garlock loamy sand, Rosamond clay loam	No Data	N/A	N/A
B	12.0	12.1	114,171,	Cajon loamy sand, Rosamond clay loam	No Data	N/A	N/A
B	12.1	12.2	171,	Rosamond clay loam	No Data	N/A	N/A
B	12.2	12.3	114,171,	Cajon loamy sand, Rosamond clay loam	No Data	N/A	N/A
B	12.3	13.4	114,	Cajon loamy sand	No Data	N/A	N/A
B	13.4	13.6	114,125,	Cajon loamy sand, DeStazo sandy loam	No Data	N/A	N/A
B	13.6	13.8	114,	Cajon loamy sand	No Data	N/A	N/A
B	13.8	14.2	114,125,	Cajon loamy sand, DeStazo sandy loam	No Data	N/A	N/A
B	14.2	14.9	125,	DeStazo sandy loam	No Data	N/A	N/A
B	14.9	15.1	125,126,	DeStazo sandy loam, DeStazo sandy loam	No Data	N/A	N/A
B	15.1	15.3	125,	DeStazo sandy loam	No Data	N/A	N/A
B	15.3	15.4	112,125,	Badland- Orthents Complex, DeStazo sandy loam	No Data	N/A	N/A
B	15.4	15.7	112,	Badland- Orthents Complex	No Data	N/A	N/A
B	15.7	15.8	112,114,CaC,RzF,	Badland- Orthents Complex, Cajon loamy sand, Rough broken land	No Data	N/A	N/A
B	15.8	15.9	114,CaC,HkB,RzF,	Cajon loamy sand	No Data	N/A	N/A
B	15.9	16.0	CaC,HkB,Rp,	Cajon loamy sand, Hesperia fine sandy loam, Rosamond loam	No Data	N/A	N/A
B	16.0	16.2	HkB,Rp,	Hesperia fine sandy loam, Rosamond loam	No Data	N/A	N/A
B	16.2	16.4	Rp,	Rosamond loam	No Data	N/A	N/A
B	16.4	16.5	HkB,Ro,Rp,	Hesperia fine sandy loam, Rosamond fine sandy loam, Rosamond loam	No Data	N/A	N/A
B	16.5	16.7	HkB,Ro,	Hesperia fine sandy loam, Rosamond fine sandy loam	No Data	N/A	N/A
B	16.7	16.9	Ro,Rp,	Rosamond fine sandy loam, Rosamond loam	No Data	N/A	N/A
B	16.9	17.0	HkA,Ro,Rp,	Hesperia fine sandy loam, Rosamond fine sandy loam, Rosamond loam	No Data	N/A	N/A
B	17.0	17.1	HkA,Rp,	Hesperia fine sandy loam, Rosamond loam	No Data	N/A	N/A
B	17.1	17.2	Rp,	Rosamond loam	No Data	N/A	N/A
B	17.2	17.3	Rp,Sv,	Rosamond loam, Sunrise sandy loam	No Data	N/A	N/A
B	17.3	17.4	HkA,Rp,Sv,	Hesperia fine sandy loam, Rosamond loam, Sunrise sandy loam	No Data	N/A	N/A
B	17.4	17.5	HkA,Sv,Sw,	Hesperia fine sandy loam, Sunrise sandy loam, Sunrise sandy loam shallow	No Data	N/A	N/A
B	17.5	17.6	HkA,Sw,	Hesperia fine sandy loam, Sunrise sandy loam shallow	No Data	N/A	N/A
B	17.6	18.0	Sv,Sw,	Sunrise sandy loam, Sunrise sandy loam shallow	No Data	N/A	N/A
B	18.0	18.1	Sv,	Sunrise sandy loam	No Data	N/A	N/A
B	18.1	18.2	Sv,Sw,Sx,	Sunrise sandy loam, Sunrise sandy loam shallow, Sunrise loam	No Data	N/A	N/A

TABLE A-10 – IMPACT ASSESSMENT TABLE
Geologic Feature: Linear Extensibility Percent

Location			Feature			Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Linear Extensibility Percent	Initial	Residual
B	18.2	18.5	Sw,Sx,	Sunrise sandy loam shallow, Sunrise loam	No Data	N/A	N/A
B	18.5	18.7	Sv,Sw,	Sunrise sandy loam, Sunrise sandy loam shallow	No Data	N/A	N/A
B	18.7	19.0	Ro,Sw,	Rosamond fine sandy loam, Sunrise sandy loam shallow	No Data	N/A	N/A
B	19.0	19.1	Ro,Rp,Sv,Sw,	Rosamond fine sandy loam, Rosamond loam, Sunrise sandy loam, Sunrise sandy loam shallow	No Data	N/A	N/A
B	19.1	19.3	Rp,Sv,	Rosamond loam, Sunrise sandy loam	No Data	N/A	N/A
B	19.3	19.6	Sv,	Sunrise sandy loam	No Data	N/A	N/A
B	19.6	19.7	HgA,Sv,	Hesperia loamy fine sand, Sunrise sandy loam	No Data	N/A	N/A
B	19.7	19.8	HgA,	Hesperia loamy fine sand	No Data	N/A	N/A
B	19.8	19.9	HgA,Ro,	Hesperia loamy fine sand, Rosamond fine sandy loam	No Data	N/A	N/A
B	19.9	20.0	Ro,	Rosamond fine sandy loam	No Data	N/A	N/A
B	20.0	20.1	Ro,Rp,	Rosamond fine sandy loam, Rosamond loam	No Data	N/A	N/A
B	20.1	20.2	Rp,	Rosamond loam	No Data	N/A	N/A
B	20.2	20.3	Ro,Rp,	Rosamond fine sandy loam, Rosamond loam	No Data	N/A	N/A
B	20.3	20.4	Ro,	Rosamond find sandy loam	No Data	N/A	N/A
B	20.4	20.5	Rm2,Ro,Rp,	Rosamond loamy fine sand hummocky, Rosamond fine sandy loam, Rosamond loam	No Data	N/A	N/A
B	20.5	20.6	Rm2,Rp,	Rosamond loamy fine sand hummocky, Rosamond loam	No Data	N/A	N/A
B	20.6	20.7	HgA,Rm2,Rp,	Hesperia loamy fine sand, Rosamond loamy fine sand hummocky, Rosamond loam	No Data	N/A	N/A
B	20.7	20.9	HgA,Ro,	Hesperia loamy fine sand, Rosamond fine sandy loam	No Data	N/A	N/A
B	20.9	21.1	Ro,Rp,	Rosamond fine sandy loam, Rosamond loam	No Data	N/A	N/A
B	21.1	21.2	Ro,	Rosamond fine sandy loam	No Data	N/A	N/A
B	21.2	21.3	Rm2,Ro,	Rosamond loamy fine sand hummocky, Rosamond fine sandy loam	No Data	N/A	N/A
B	21.3	21.4	Rm,Rm2,	Rosamond loamy fine sand, Rosamond loamy fine sand hummocky	No Data	N/A	N/A
B	21.4	21.6	Rm,Rp,	Rosamond loamy fine sand, Rosamond loam	No Data	N/A	N/A
B	21.6	22.0	Ro,Rp,	Rosamond fine sandy loam, Rosamond loam	No Data	N/A	N/A
B	22.0	22.3	Ro,Rt,	Rosamond fine sandy loam, Rosamond silty clay loam	No Data	N/A	N/A
B	22.3	22.4	HcA,Rt,	Hanford sandy loam, Rosamond silty clay loam	No Data	N/A	N/A
B	22.4	22.5	HcA,HkA,	Hanford sandy loam, Hesperia fine sandy loam	No Data	N/A	N/A
B	22.5	23.0	HkA,	Hesperia fine sandy loam	No Data	N/A	N/A
B	23.0	23.2	GsA,HkA,	Greenfield sandy loam, Hesperia fine sandy loam	No Data	N/A	N/A
B	23.2	23.4	GsA,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	No Data	N/A	N/A
B	23.4	23.7	HbA,	Hanford coarse sandy loam	No Data	N/A	N/A
B	23.7	23.8	GsA,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	No Data	N/A	N/A
B	23.8	23.9	GsA,GsC,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	No Data	N/A	N/A
B	23.9	24.0	GsA,GsC,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
B	24.0	24.2	RcA,	Ramona coarse sandy loam	No Data	N/A	N/A
B	24.2	24.3	HbA,RcA,	Hanford coarse sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
B	24.3	24.5	HbA,	Hanford coarse sandy loam	No Data	N/A	N/A
B	24.5	24.7	GsC,HbA,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	No Data	N/A	N/A
B	24.7	24.8	GsC,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	No Data	N/A	N/A
B	24.8	24.9	GsA,GsC,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	No Data	N/A	N/A
B	24.9	25.0	GsA,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	No Data	N/A	N/A
B	25.0	25.7	GsA,	Greenfield sandy loam	No Data	N/A	N/A
B	25.7	25.8	GsA,HbA,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	No Data	N/A	N/A
B	25.8	25.9	GsC,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	No Data	N/A	N/A
B	25.9	26.2	GsC	Greenfield sandy loam	No Data	N/A	N/A
B	26.2	26.4	GsC2,	Greenfield sandy loam	No Data	N/A	N/A
B	26.4	26.5	GsC	Greenfield sandy loam	No Data	N/A	N/A

TABLE A-10 – IMPACT ASSESSMENT TABLE
Geologic Feature: Linear Extensibility Percent

Location			Feature			Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Linear Extensibility Percent	Initial	Residual
C	0.0	0.2	114,	Cajon loamy sand	No Data	N/A	N/A
C	0.2	0.3	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	No Data	N/A	N/A
C	0.3	0.4	114,116,137,	Cajon loamy sand, Cajon gravelly loamy sand, Garlock loamy sand	No Data	N/A	N/A
C	0.4	0.5	114,137,	Cajon loamy sand	No Data	N/A	N/A
C	0.5	0.6	114,116,137,	Cajon loamy sand, Cajon gravelly loamy sand, Garlock loamy sand	No Data	N/A	N/A
C	0.6	1.0	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	No Data	N/A	N/A
C	1.0	1.1	137,	Garlock loamy sand	No Data	N/A	N/A
C	1.1	1.3	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	No Data	N/A	N/A
C	1.3	1.5	137,	Garlock loamy sand	No Data	N/A	N/A
C	1.5	1.7	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	No Data	N/A	N/A
C	1.7	1.8	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	No Data	N/A	N/A
C	1.8	2.0	137,	Garlock loamy sand	No Data	N/A	N/A
C	2.0	2.1	116,137,	Cajon loamy sand, Garlock loamy sand	No Data	N/A	N/A
C	2.1	2.2	114,116,137,	Cajon loamy sand, Cajon gravelly loamy sand, Garlock loamy sand	No Data	N/A	N/A
C	2.2	2.5	114,	Cajon loamy sand	No Data	N/A	N/A
C	2.5	2.7	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	No Data	N/A	N/A
C	2.7	2.8	116,	Cajon gravelly loamy sand	No Data	N/A	N/A
C	2.8	3.1	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	No Data	N/A	N/A
C	3.1	3.2	116,	Cajon gravelly loamy sand	No Data	N/A	N/A
C	3.2	3.3	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	No Data	N/A	N/A
C	3.3	3.8	114,	Cajon loamy sand	No Data	N/A	N/A
C	3.8	4.0	114,137,	Cajon loamy sand, Garlock loamy sand	No Data	N/A	N/A
C	4.0	4.2	137,	Garlock loamy sand	No Data	N/A	N/A
C	4.2	4.3	114,137,	Cajon loamy sand, Garlock loamy sand	No Data	N/A	N/A
C	4.3	4.4	114,	Cajon loamy sand	No Data	N/A	N/A
C	4.4	4.5	114,137,	Cajon loamy sand, Garlock loamy sand	No Data	N/A	N/A
C	4.5	4.7	114,	Cajon loamy sand	No Data	N/A	N/A
C	4.7	4.8	114,137,	Cajon loamy sand, Garlock loamy sand	No Data	N/A	N/A
C	4.8	5.0	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	No Data	N/A	N/A
C	5.0	5.1	116,	Cajon gravelly loamy sand	No Data	N/A	N/A
C	5.1	5.2	114,116,	Cajon loamy sand	No Data	N/A	N/A
C	5.2	5.7	114,	Cajon loamy sand, Cajon gravelly loamy sand	No Data	N/A	N/A
C	5.7	5.8	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	No Data	N/A	N/A
C	5.8	5.9	116,	Cajon gravelly loamy sand, Garlock loamy sand	No Data	N/A	N/A
C	5.9	6.0	116,137,	Cajon gravelly loamy sand	No Data	N/A	N/A
C	6.0	6.1	114,137,	Cajon loamy sand, Garlock loamy sand	No Data	N/A	N/A
C	6.1	7.9	114,	Cajon loamy sand	No Data	N/A	N/A
C	7.9	8.1	114,137,	Cajon loamy sand, Garlock loamy sand	No Data	N/A	N/A
C	8.1	8.6	114,	Cajon loamy sand	No Data	N/A	N/A
C	8.6	8.7	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	No Data	N/A	N/A
C	8.7	9.0	116,	Cajon gravelly loamy sand	No Data	N/A	N/A
C	9.0	9.1	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	No Data	N/A	N/A
C	9.1	9.8	114,	Cajon loamy sand	No Data	N/A	N/A
C	9.8	9.9	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	No Data	N/A	N/A
C	9.9	10.2	116,	Cajon gravelly loamy sand	No Data	N/A	N/A
C	10.2	10.4	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	No Data	N/A	N/A
C	10.4	10.5	116,	Cajon gravelly loamy sand	No Data	N/A	N/A
C	10.5	10.7	116,CaC,	Cajon gravelly loamy sand	No Data	N/A	N/A
C	10.7	11.7	CaC,	Cajon loamy sand	No Data	N/A	N/A
C	11.7	12.1	AaB,CaC,	Adelanto loamy sand, Cajon loamy sand	No Data	N/A	N/A
C	12.1	12.2	CaC,	Cajon loamy sand	No Data	N/A	N/A
C	12.2	12.4	AaB,CaC,	Adelanto loamy sand, Cajon loamy sand	No Data	N/A	N/A
C	12.4	13.3	AaB,	Adelanto loamy sand	No Data	N/A	N/A
C	13.3	13.4	AaB,CaC,HbC,	Adelanto loamy sand, Cajon loamy sand, Hanford coarse sandy loam	No Data	N/A	N/A

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TABLE A-10 – IMPACT ASSESSMENT TABLE
Geologic Feature: Linear Extensibility Percent

Location			Feature			Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Linear Extensibility Percent	Initial	Residual
C	13.4	13.6	CaC,HbC,	Cajon loamy sand, Hanford coarse sandy loam	No Data	N/A	N/A
C	13.6	13.7	CaC,HbC,	Cajon loamy sand, Hanford coarse sandy loam	No Data	N/A	N/A
C	13.7	14.1	HbC,	Hanford coarse sandy loam	No Data	N/A	N/A
C	14.1	14.4	HbC,HkB,	Hanford coarse sandy loam, Hesperia fine sandy loam	No Data	N/A	N/A
C	14.4	14.5	CaC,HkB,	Cajon loamy sand, Hesperia fine sandy loam	No Data	N/A	N/A
C	14.5	14.6	CaC,HbC,HkB,	Cajon loamy sand, Hanford coarse sandy loam, Hesperia fine sandy loam	No Data	N/A	N/A
C	14.6	14.8	CaC,HbC,	Cajon loamy sand, Hanford coarse sandy loam	No Data	N/A	N/A
C	14.8	15.9	HbC,	Hanford coarse sandy loam	No Data	N/A	N/A
C	15.9	16.1	GsC,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	No Data	N/A	N/A
C	16.1	16.2	CaC,HbC,	Cajon loamy sand, Hanford coarse sandy loam	No Data	N/A	N/A
C	16.2	17.5	CaC,	Cajon loamy sand	No Data	N/A	N/A
C	17.5	17.6	CaC,HdC,HkB,	Cajon loamy sand, Hanford gravelly sandy loam, Hesperia fine sandy loam	No Data	N/A	N/A
C	17.6	18.3	HdC,HkB,	Hanford gravelly sandy loam, Hesperia fine sandy loam	No Data	N/A	N/A
C	18.3	18.4	HdC,HkB,	Hanford gravelly sandy loam, Hesperia fine sandy loam	No Data	N/A	N/A
C	18.4	18.5	HdC,	Hanford gravelly sandy loam	No Data	N/A	N/A
C	18.5	18.8	AsB,HdC,	Arizo gravelly loamy sand, Hanford gravelly sandy loam	No Data	N/A	N/A
C	18.8	19.5	AsB,	Arizo gravelly loamy sand	No Data	N/A	N/A
C	19.5	19.7	AsB,CaC,	Arizo gravelly loamy sand, Cajon loamy sand	No Data	N/A	N/A
C	19.7	19.8	CaC,ReC,	Cajon loamy sand, Ramona gravelly sandy loam	No Data	N/A	N/A
C	19.8	20.1	CaC,	Cajon loamy sand	No Data	N/A	N/A
C	20.1	20.4	AsB,CaC,	Arizo gravelly loamy sand, Cajon loamy sand	No Data	N/A	N/A
C	20.4	20.6	CaC,	Cajon loamy sand	No Data	N/A	N/A
C	20.6	20.8	CaC,HbC,RdE2,	Cajon loamy sand, Hanford coarse sandy loam, Ramona sandy loam	No Data	N/A	N/A
C	20.8	21.4	HbC,	Hanford coarse sandy loam	No Data	N/A	N/A
C	21.4	21.5	CaC,HbC,	Cajon loamy sand, Hanford coarse sandy loam	No Data	N/A	N/A
C	21.5	21.7	CaC,	Cajon loamy sand	No Data	N/A	N/A
D	0.0	0.6	CaC,	Cajon loamy sand	No Data	N/A	N/A
D	0.6	0.7	CaC,RdE2,	Cajon loamy sand, Ramona sandy loam	No Data	N/A	N/A
D	0.7	0.8	CaC,HkB,RdE2,	Cajon loam sand, Hesperia fine sandy loam, Ramona sandy loam	No Data	N/A	N/A
D	0.8	0.9	CaC,HkB,	Cajon loamy sand, Hesperia fine sandy loam	No Data	N/A	N/A
D	0.9	1.0	CaC,HkB,	Cajon loamy sand, Hesperia fine sandy loam	No Data	N/A	N/A
D	1.0	1.2	HkB,	Hesperia fine sandy loam	No Data	N/A	N/A
D	1.2	1.4	HbC,HkB,	Hanford coarse sandy loam, Hesperia fine sandy loam	No Data	N/A	N/A
D	1.4	1.7	HbC,RdE2,	Hanford coarse sandy loam, Ramona sandy loam	No Data	N/A	N/A
D	1.7	1.8	HbC,RdE2,	Hanford coarse sandy loam, Ramona sandy loam	No Data	N/A	N/A
D	1.8	1.9	HbC,	Hanford coarse sandy loam	No Data	N/A	N/A
D	1.9	2.4	HbC,RdE2,	Hanford coarse sandy loam, Ramona sandy loam	No Data	N/A	N/A
D	2.4	2.5	HbC,	Hanford coarse sandy loam	No Data	N/A	N/A
D	2.5	2.7	HbC,HkB,	Hanford coarse sandy loam, Hesperia fine sandy loam	No Data	N/A	N/A
D	2.7	2.8	GsC,HkB,	Greenfield sandy loam, Hesperia fine sandy loam	No Data	N/A	N/A
D	2.8	3.1	GsC	Greenfield sandy loam	No Data	N/A	N/A
D	3.1	3.3	GsC,HaB2,	Greenfield sandy loam, Hanford loamy sand	No Data	N/A	N/A
D	3.3	3.5	GsC	Greenfield sandy loam	No Data	N/A	N/A
D	3.5	3.7	GsC,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	No Data	N/A	N/A
D	3.7	3.9	HbC,	Hanford coarse sandy loam	No Data	N/A	N/A
D	3.9	4.2	HaB2,HbC,	Hanford loamy sand, Hanford coarse sandy loam	No Data	N/A	N/A
D	4.2	4.4	HaB2,	Hanford loamy sand	No Data	N/A	N/A
D	4.4	4.5	HaB2,HbC,	Hanford loamy sand, Hanford coarse sandy loam	No Data	N/A	N/A

TABLE A-10 – IMPACT ASSESSMENT TABLE
Geologic Feature: Linear Extensibility Percent

Location			Feature			Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Linear Extensibility Percent	Initial	Residual
D	4.5	6.1	HbC,	Hanford coarse sandy loam	No Data	N/A	N/A
D	6.1	6.2	HbC,HcC,	Hanford coarse sandy loam, Hanford sandy loam	No Data	N/A	N/A
D	6.2	6.5	HcC,	Hanford sandy loam	No Data	N/A	N/A
D	6.5	6.7	HbC,HcC,	Hanford coarse sandy loam, Hanford sandy loam	No Data	N/A	N/A
D	6.7	7.4	HbC,	Hanford coarse sandy loam	No Data	N/A	N/A
D	7.4	7.5	HbC,HbD,	Hanford coarse sandy loam	No Data	N/A	N/A
D	7.5	7.6	HbC,HbD,HcC,	Hanford coarse sandy loam, Hanford sandy loam	No Data	N/A	N/A
D	7.6	7.7	HbC,HcC,	Hanford coarse sandy loam, Hanford sandy loam	No Data	N/A	N/A
D	7.7	7.9	HcC,	Hanford coarse sandy loam	No Data	N/A	N/A
D	7.9	8.0	HaB2,HcC,	Hanford loamy sand, Hanford sandy loam	No Data	N/A	N/A
D	8.0	8.5	HaB2,	Hanford loamy sand	No Data	N/A	N/A
D	8.5	8.6	HaB2,HbC,	Hanford loamy sand, Hanford coarse sandy loam	No Data	N/A	N/A
D	8.6	8.7	HaB2,HbC,HcC,	Hanford loamy sand, Hanford coarse sandy loam, Hanford sandy loam	No Data	N/A	N/A
D	8.7	8.8	HbC,HcC,	Hanford coarse sandy loam, Hanford sandy loam	No Data	N/A	N/A
D	8.8	9.3	HcC,	Hanford coarse sandy loam	No Data	N/A	N/A
D	9.3	9.7	HaB2,HbC,HcC,	Hanford loamy sand, Hanford coarse sandy loam, Hanford sandy loam	No Data	N/A	N/A
D	9.7	9.8	HaB2,HbC,	Hanford loam sand, Hanford coarse sandy loam	No Data	N/A	N/A
D	9.8	9.9	DuD,HaB2,	Dune land, Hanford loamy sand	No Data	N/A	N/A
D	9.9	10.0	DuD,	Dune land	No Data	N/A	N/A
D	10.0	10.2	DuD,HaB2,	Dune land, Hanford loamy sand	No Data	N/A	N/A
D	10.2	10.3	HaB2,	Hanford loamy sand	No Data	N/A	N/A
D	10.3	10.4	DuD,HaB2,	Dune land, Hanford loamy sand	No Data	N/A	N/A
D	10.4	10.7	DuD,	Dune land	No Data	N/A	N/A
D	10.7	10.8	DuD,HaB2,	Dune land, Hanford loamy sand	No Data	N/A	N/A
D	10.8	10.9	DuD,HaB2,VbA,	Dune land, Hanford loamy sand, Vernalis loam	No Data	N/A	N/A
D	10.9	11.2	VbA,	Vernalis loam	No Data	N/A	N/A
D	11.2	11.4	HcC,VbA,VcA,	Hanford sandy loam, Vernalis loam, Vernalis clay loam	No Data	N/A	N/A
D	11.4	13.1	HcC,	Hanford sandy loam	No Data	N/A	N/A
D	13.1	13.3	HcC,ObC,	Hanford sandy loam, Oak Glen sandy loam	No Data	N/A	N/A
D	13.3	13.4	ObC,	Oak Glen sandy loam	No Data	N/A	N/A
D	13.4	13.5	ObC,VbB,	Oak Glen sandy loam, Vernalis loam	No Data	N/A	N/A
D	13.5	13.6	ObC,VbA,VbB,	Oak Glen sandy loam, Vernalis loam	No Data	N/A	N/A
D	13.6	13.7	VbA,VbB,	Vernalis loam	No Data	N/A	N/A
D	13.7	14.0	VbB,	Vernalis loam	No Data	N/A	N/A
D	14.0	14.4	ObC,VbB,	Oak Glen sandy loam, Vernalis loam	No Data	N/A	N/A
D	14.4	14.5	ObC,OdC,VbB,	Oak Glen sandy loam, Oak Glen loam, Vernalis Loam	No Data	N/A	N/A
D	14.5	14.7	OdC,VbB,	Oak Glen loam, Vernalis Loam	No Data	N/A	N/A
D	14.7	15.4	OdC,	Oak Glen loam	No Data	N/A	N/A
D	15.4	15.6	OcC,OdC,	Oak Glen gravelly sandy loam, Oak Glen loam	No Data	N/A	N/A
D	15.6	15.7	OdC,RcC,VbA,	Oak Glen loam, Ramona coarse sandy loam, Vernalis loam	No Data	N/A	N/A
D	15.7	15.9	OdC,VbA,	Oak Glen loam, Vernalis Loam	No Data	N/A	N/A
D	15.9	16.3	OdC,	Oak Glen loam	No Data	N/A	N/A
D	16.3	16.5	OdC,TrF,	Oak Glen loam, Temescal-Rock land complex	No Data	N/A	N/A
D	16.5	16.6	OaC,OdC,TrF,	Oakdale sandy loam, Oak Glen loam, Temescal-Rock land complex	No Data	N/A	N/A
D	16.6	16.7	OaC,OdC,ReC,	Oakdale sandy loam, Oak Glen loam, Ramona gravelly sandy loam	No Data	N/A	N/A
D	16.7	16.8	OaC,ReC,	Oakdale sandy loam, Ramona gravelly sandy loam	No Data	N/A	N/A
D	16.8	17.1	ReC,	Ramona gravelly sandy loam	No Data	N/A	N/A
D	17.1	17.2	ReC,TrF,	Ramona gravelly sandy loam, Temescal-Rock land complex	No Data	N/A	N/A
D	17.2	17.5	ReC,	Ramona gravelly sandy loam	No Data	N/A	N/A
D	17.5	17.6	Co,ReC,	Chino loam, Ramona gravelly sandy loam	No Data	N/A	N/A

TABLE A-10 – IMPACT ASSESSMENT TABLE
Geologic Feature: Linear Extensibility Percent

Location			Feature			Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Linear Extensibility Percent	Initial	Residual
D	17.6	17.7	Co,MhF2,ReC,	Chino loam, Millsholm rocky loam, Ramona gravelly sandy loam	No Data	N/A	N/A
D	17.7	17.9	MhF2,ReC,	Millsholm rocky loam, Ramona gravelly sandy loam	No Data	N/A	N/A
D	17.9	18.0	MhF2,OdC,ReC,	Millsholm rocky loam, Oak Glen loam, Ramona gravelly sandy loam	No Data	N/A	N/A
D	18.0	18.7	OdC,RcC,	Oak Glen loam, Ramona coarse sandy loam	No Data	N/A	N/A
D	18.7	18.8	RcC,	Ramona coarse sandy loam	No Data	N/A	N/A
D	18.8	19.2	OdC,RcC,	Oak Glen loam, Ramona coarse sandy loam	No Data	N/A	N/A
D	19.2	19.5	MhF2,OdC,	Millsholm rocky loam, Oak Glen loam	No Data	N/A	N/A
D	19.5	20.4	OdC,	Oak Glen loam	No Data	N/A	N/A
D	20.4	20.5	GoF2,OdC,	Gorman sandy loam, Oak Glen loam	No Data	N/A	N/A
D	20.5	20.6	GoF2,OcC,OdC,	Gorman sandy loam, Oak Glen gravelly sandy loam, Oak Glen loam	No Data	N/A	N/A
D	20.6	20.8	GoF2,OcC,	Gorman sandy loam, Oak Glen gravelly sandy loam	No Data	N/A	N/A
D	20.8	20.9	GoF2,GuF,OcC,	Gorman sandy loam, Gullied land, Oak Glen gravelly sandy loam	No Data	N/A	N/A
D	20.9	21.0	GuF,OcC,	Gullied land, Oak Glen gravelly sandy loam	No Data	N/A	N/A
D	21.0	21.1	GoD2,GuF,OcC,	Gorman sandy loam, Gullied land, Oak Glen gravelly sandy loam	No Data	N/A	N/A
D	21.1	21.2	GoE2,GuF,ObC,	Gorman sandy loam, Gullied land, Oak Glen sandy loam	No Data	N/A	N/A
D	21.2	21.3	GoD2,GoE2,GuF,	Gorman sandy loam, Gullied land	No Data	N/A	N/A
D	21.3	21.4	GoD2,GoF2,GuF,	Gorman sandy loam, Gullied land	No Data	N/A	N/A
D	21.4	21.5	GoD2,GoF2,	Gorman sandy loam	No Data	N/A	N/A
D	21.5	21.6	GoF2,	Gorman sandy loam	No Data	N/A	N/A
D	21.6	21.7	GoF2,GuF,	Gorman sandy loam, Gullied land	No Data	N/A	N/A
D	21.7	21.9	GoD2,GoE2,GoF2,GuF,	Gorman sandy loam, Gullied land	No Data	N/A	N/A
D	21.9	22.0	GoE2,GoF2,	Gorman sandy loam	No Data	N/A	N/A
D	22.0	22.2	GoD2,GoF2,	Gorman sandy loam	No Data	N/A	N/A
D	22.2	22.5	GoE2,GoF2,	Gorman sandy loam	No Data	N/A	N/A
D	22.5	22.8	GoE2,GoF2,GuF,	Gorman sandy loam, Gullied land	No Data	N/A	N/A
D	22.8	22.9	GoF2,GuF,RzF,	Gorman sandy loam, Gullied land, Rough broken land	No Data	N/A	N/A
D	22.9	23.0	GuF,RzF,	Gullied land, Rough broken land	No Data	N/A	N/A
D	23.0	23.1	GuF,	Gullied land	No Data	N/A	N/A
D	23.1	23.3	75,GuF,	Trigo-Calleguas families-Haploxeralfs complex, Gullied land	No Data	N/A	N/A
D	23.3	23.6	75,	Trigo-Calleguas families-Haploxeralfs complex	No Data	N/A	N/A
D	23.6	23.8	75,GuF,	Trigo-Calleguas families-Haploxeralfs complex, Gullied land	No Data	N/A	N/A
D	23.8	24.2	75,	Trigo-Calleguas families-Haploxeralfs complex	No Data	N/A	N/A
D	24.2	25.0	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	No Data	N/A	N/A
D	25.0	25.1	75,	Trigo-Calleguas families-Haploxeralfs complex	No Data	N/A	N/A
D	25.1	25.4	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	No Data	N/A	N/A
D	25.4	26.0	75,	Trigo-Calleguas families-Haploxeralfs complex	No Data	N/A	N/A
D	26.0	26.2	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	No Data	N/A	N/A
D	26.2	26.6	74,	Trigo-Calleguas families-Rock outcrop complex	No Data	N/A	N/A
D	26.6	26.9	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	No Data	N/A	N/A
D	26.9	28.2	75,	Trigo-Calleguas families-Haploxeralfs complex	No Data	N/A	N/A
D	28.2	28.5	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	No Data	N/A	N/A

TABLE A-10 – IMPACT ASSESSMENT TABLE
Geologic Feature: Linear Extensibility Percent

Location			Feature			Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Linear Extensibility Percent	Initial	Residual
D	28.5	28.8	75,	Trigo-Calleguas families-Haploxeralfs complex	No Data	N/A	N/A
D	28.8	28.9	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	No Data	N/A	N/A
D	28.9	29.6	75,	Trigo-Calleguas families-Haploxeralfs complex	No Data	N/A	N/A
D	29.6	29.8	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	No Data	N/A	N/A
D	29.8	30.2	74,	Trigo-Calleguas families-Rock outcrop complex	No Data	N/A	N/A
D	30.2	30.4	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	No Data	N/A	N/A
D	30.4	30.7	75,		No Data	N/A	N/A
D	30.7	30.9	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	No Data	N/A	N/A
D	30.9	31.2	74,	Trigo-Calleguas families-Rock outcrop complex	No Data	N/A	N/A
D	31.2	31.3	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	No Data	N/A	N/A
D	31.3	32.7	75,	Trigo-Calleguas families-Haploxeralfs complex	No Data	N/A	N/A
D	32.7	32.8	72,75,	Osito-Trigo families complex, Trigo-Calleguas families-Haploxeralfs complex	No Data	N/A	N/A
D	32.8	34.7	72,	Osito-Trigo families complex	No Data	N/A	N/A
D	34.7	35.0	72,82,	Osito-Trigo families complex, Vertic Xerochrepts	No Data, 7.5	H	L
D	35.0	36.3	82,	Vertic Xerochrepts	7.5	H	L
D	36.3	36.5	72,82,	Osito-Trigo families complex, Vertic Xerochrepts	No Data, 7.5	H	L
D	36.5	37.2	72,	Osito-Trigo families complex	No Data	N/A	N/A
D	37.2	37.3	72,75,MhF2,	Osito-Trigo families complex, Trigo-Calleguas families-Haploxeralfs complex, Millsholm rocky loam	No Data	N/A	N/A
D	37.3	37.4	75,MhF2,	Trigo-Calleguas families-Haploxeralfs complex, Millsholm rocky loam	No Data	N/A	N/A
D	37.4	37.6	MhF2,	Millsholm rocky loam	No Data	N/A	N/A
D	37.6	37.9	MhE2,MhF2,	Millsholm rocky loam,	No Data	N/A	N/A
D	37.9	38.5	MhE2,	Millsholm rocky loam	No Data	N/A	N/A
D	38.5	38.9	MhE2,MhF2,	Millsholm rocky loam,	No Data	N/A	N/A
D	38.9	39.1	MhF2,	Millsholm rocky loam	No Data	N/A	N/A
D	39.1	39.2	CmF,MhF2,	Castaic-Balcom silty clay loams, Millsholm rocky loam	No Data	N/A	N/A
D	39.2	40.1	CmF,	Castaic-Balcom silty clay loams	No Data	N/A	N/A
D	40.1	40.3	CmE,CmF,	Castaic-Balcom silty clay loams	No Data	N/A	N/A
D	40.3	40.4	CmE,	Castaic-Balcom silty clay loams	No Data	N/A	N/A
D	40.4	40.6	CmE,CmF,	Castaic-Balcom silty clay loams	No Data	N/A	N/A
D	40.6	41.4	CmF,	Castaic-Balcom silty clay loams	No Data	N/A	N/A
D	41.4	41.7	CmE,CmF,	Castaic-Balcom silty clay loams	No Data	N/A	N/A
D	41.7	41.9	CmF,	Castaic-Balcom silty clay loams	No Data	N/A	N/A
D	41.9	42.0	CmF,HcC,	Castaic-Balcom silty clay loams, Hanford sandy loam	No Data	N/A	N/A
D	42.0	42.1	CmF,HcA,HcC,	Castaic-Balcom silty clay loams, Hanford sandy loam	No Data	N/A	N/A
D	42.1	42.2	CyA,HcA,HcC,	Cortina sandy loam, Hanford sandy loam,	No Data	N/A	N/A
D	42.2	42.3	CyA,Rg,	Cortina sandy loam, Riverwash	No Data	N/A	N/A
D	42.3	42.4	CmF,Rg,	Castaic-Balcom silty clay loams, Riverwash	No Data	N/A	N/A
D	42.4	42.8	CmF,	Castaic-Balcom silty clay loams	No Data	N/A	N/A
D	42.8	43.0	CmF,MhE2,	Castaic-Balcom silty clay loams, Millsholm rocky loam	No Data	N/A	N/A
D	43.0	43.1	MhE2,	Millsholm rocky loam	No Data	N/A	N/A
D	43.1	43.2	CmF2,MhE2,	Castaic-Balcom silty clay loams, Millsholm rocky loam	No Data	N/A	N/A
D	43.2	43.3	26,CmF2,MhE2,	Stonyford-Millsholm families complex, Castaic-Balcom silty clay loams, Millsholm rocky loam	No Data	N/A	N/A
D	43.3	43.8	26,	Stonyford-Millsholm families complex	No Data	N/A	N/A

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TABLE A-10 – IMPACT ASSESSMENT TABLE
Geologic Feature: Linear Extensibility Percent

Location			Feature			Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Linear Extensibility Percent	Initial	Residual
D	43.8	43.9	26,7,	Stonyford-Millsholm families complex, Hanford family	No Data	N/A	N/A
D	43.9	44.6	26,	Stonyford-Millsholm families complex	No Data	N/A	N/A
D	44.6	44.8	26,7,	Stonyford-Millsholm families complex, Hanford family	No Data	N/A	N/A
D	44.8	45.0	12,26,	Mollic Haploxeralfs, Stonyford-Millsholm families complex	No Data	N/A	N/A
D	45.0	45.1	12,ScE,	Mollic Haploxeralfs, Saugas loam	No Data	N/A	N/A
D	45.1	45.3	12,CnG3,ScE,	Mollic Haploxeralfs, Castaica and Saugas soils, Saugas loam	No Data	N/A	N/A
D	45.3	45.5	ScE,ScF2,	Saugas loam	No Data	N/A	N/A
D	45.5	45.6	CmF,ScE,ScF2,	Castaic-Balcom silty clay loams, Saugas loam	No Data	N/A	N/A
D	45.6	45.7	CmF,ScF2,	Castaic-Balcom silty clay loams, Saugas loam	No Data	N/A	N/A
D	45.7	45.8	CmF,CnG3,ScE,ScF2,	Castaic-Balcom silty clay loams, Castaic and Saugus soils, Saugas loam	No Data	N/A	N/A
D	45.8	46.0	CnG3,ScF2,	Castaic and Saugus soils, Saugas loam	No Data	N/A	N/A
D	46.0	46.1	ScF2,	Saugas loam	No Data	N/A	N/A
D	46.1	46.2	Sa,ScF2,YoC,	Sandy alluvial land, Saugas loam, Yolo loam	No Data	N/A	N/A
D	46.2	46.3	Sa,YoC,	Sandy alluvial land, Yolo loam	No Data	N/A	N/A
D	46.3	46.4	MfC,Sa,ScE,ScF2,	Metz loamy sand, Sandy alluvial land, Saugas loam,	No Data	N/A	N/A
D	46.4	46.5	CmF2,HcC,ScE,ScF2,ZaC,	Hanford sandy loam, Saugas loam, Zamora loam	No Data	N/A	N/A
D	46.5	46.6	15,CmF2,	Calcixerollic Xerochrepts-Calleguas family-Modesto family moderately deep complex, Castaic-Balcom silty clay loams	No Data	N/A	N/A
D	46.6	47.4	15,	Calcixerollic Xerochrepts-Calleguas family-Modesto family moderately deep complex	No Data	N/A	N/A
D	47.4	47.5	12,15,	Mollic Haploxeralfs, Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data	N/A	N/A
D	47.5	47.9	12,	Mollic Haploxeralfs	No Data	N/A	N/A
D	47.9	48.1	12,15,	Mollic Haploxeralfs, Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data	N/A	N/A
D	48.1	48.2	15,	Calcixerollic Xerochrepts-Calleguas family-Modesto family moderately deep complex	No Data	N/A	N/A
E	0.0	0.3	CaC,	Cajon loamy sand	No Data	N/A	N/A
E	0.3	0.9	CaC,HkB,	Cajon loamy sand, Hesperia fine sandy loam	No Data	N/A	N/A
E	0.9	1.0	HkB,Rp,	Hesperia fine sandy loam, Rosamond loam	No Data	N/A	N/A
E	1.0	1.5	Rp,	Rosamond loam	No Data	N/A	N/A
E	1.5	1.6	Ro,Rp,	Rosamond fine sandy loam, Rosamond loam	No Data	N/A	N/A
E	1.6	1.8	HkB,Ro,	Hesperia fine sandy loam, Rosamond fine sandy loam	No Data	N/A	N/A
E	1.8	1.9	HkA,HkB,Ro,	Hesperia fine sandy loam, Rosamond fine sandy loam	No Data	N/A	N/A
E	1.9	2.2	HkA,	Hesperia fine sandy loam	No Data	N/A	N/A
E	2.2	2.3	HkA,Rp,	Hesperia fine sandy loam, Rosamond loam	No Data	N/A	N/A
E	2.3	2.4	HgA2,HkA,Ro,Rp,	Hesperia loamy fine sand, Hesperia fine sandy loam, Rosamond fine sandy loam, Rosamond loam	No Data	N/A	N/A
E	2.4	2.5	HgA2,Ro,	Hesperia loamy fine sand, Rosamond fine sandy loam	No Data	N/A	N/A
E	2.5	2.6	Ro,	Rosamond fine sandy loam	No Data	N/A	N/A
E	2.6	2.8	Rm2,Ro,	Rosamond loamy fine sand, hummocky, Rosamond fine sandy loam	No Data	N/A	N/A
E	2.8	2.9	Rm,Rm2,Ro,	Rosamond loamy fine sand, Rosamond loamy fine sand, hummocky, Rosamond fine sandy loam	No Data	N/A	N/A
E	2.9	3.1	Rm,Ro,	Rosamond loamy fine sand, Rosamond fine sandy loam	No Data	N/A	N/A

TABLE A-10 – IMPACT ASSESSMENT TABLE
Geologic Feature: Linear Extensibility Percent

Location			Feature			Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Linear Extensibility Percent	Initial	Residual
E	3.1	3.3	Ro,	Rosamond fine sandy loam	No Data	N/A	N/A
E	3.3	4.0	Rm,Ro,	Rosamond loamy fine sand, Rosamond fine sandy loam	No Data	N/A	N/A
E	4.0	4.3	Ro,	Rosamond fine sandy loam	No Data	N/A	N/A
E	4.3	4.5	Ro,Rp,	Rosamond fine sandy loam, Rosamond loam	No Data	N/A	N/A
E	4.5	4.6	Ro,Rp,Rt,	Rosamond fine sandy loam, Rosamond loam, Rosamond silty clay loam	No Data	N/A	N/A
E	4.6	4.7	Rp,Rt,	Rosamond loam, Rosamond silty clay loam	No Data	N/A	N/A
E	4.7	5.1	Ro,Rt,	Rosamond loam, Rosamond silty clay loam	No Data	N/A	N/A
E	5.1	5.2	Ro,Rp,Rt,	Rosamond fine sandy loam, Rosamond loam, Rosamond silty clay loam	No Data	N/A	N/A
E	5.2	5.6	Rp,Rt,	Rosamond loam, Rosamond silty clay loam	No Data	N/A	N/A
E	5.6	5.9	Ro,Rp,	Rosamond fine sandy loam, Rosamond loam	No Data	N/A	N/A
E	5.9	6.0	HbC,Ro,	Hanford coarse sandy loam, Rosamond fine sandy loam	No Data	N/A	N/A
E	6.0	6.1	HbC,HkA,Ro,	Hanford coarse sandy loam, Hesperia fine sandy loam, Rosamond fine sandy loam	No Data	N/A	N/A
E	6.1	6.2	HkA,	Hesperia fine sandy loam	No Data	N/A	N/A
E	6.2	6.3	HbA,HkA,	Hanford coarse sandy loam, Hesperia fine sandy loam	No Data	N/A	N/A
E	6.3	6.4	HbA,HcA,HkA,	Hanford coarse sandy loam, Hanford sandy loam, Hesperia fine sandy loam	No Data	N/A	N/A
E	6.4	6.5	HbA,HcA,Ro,	Hanford coarse sandy loam, Hanford sandy loam, Rosamond fine sandy loam	No Data	N/A	N/A
E	6.5	6.7	HcA,Ro,	Hanford sandy loam, Rosamond fine sandy loam	No Data	N/A	N/A
E	6.7	6.9	HcA,	Hanford sandy loam	No Data	N/A	N/A
E	6.9	7.0	HcA,RcA,	Hanford sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
E	7.0	7.1	RcA,	Ramona coarse sandy loam	No Data	N/A	N/A
E	7.1	7.4	HbA,RcA,	Hanford coarse sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
E	7.4	7.6	RcA,	Ramona coarse sandy loam	No Data	N/A	N/A
E	7.6	7.7	GsA,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
E	7.7	7.8	GsA,GsC2,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
E	7.8	7.9	GsC2,	Greenfield sandy loam	No Data	N/A	N/A
E	7.9	8.0	GsC	Greenfield sandy loam	No Data	N/A	N/A
E	8.0	8.1	GsC,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	No Data	N/A	N/A
E	8.1	8.2	GsA,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	No Data	N/A	N/A
E	8.2	8.3	GsA,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
E	8.3	8.4	GsA,	Greenfield sandy loam	No Data	N/A	N/A
E	8.4	8.5	GsA,GsC,	Greenfield sandy loam	No Data	N/A	N/A
E	8.5	8.6	GsA,GsC,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	No Data	N/A	N/A
E	8.6	8.8	GsC,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	No Data	N/A	N/A
E	8.8	9.1	GsC	Greenfield sandy loam	No Data	N/A	N/A
E	9.1	9.2	GsC,VsD2,	Greenfield sandy loam, Vista coarse sandy loam	No Data	N/A	N/A
E	9.2	9.3	VsD2,VsE2,	Vista coarse sandy loam	No Data	N/A	N/A
E	9.3	9.5	VsE2,	Vista coarse sandy loam	No Data	N/A	N/A
E	9.5	9.6	VsD2,VsE2,	Vista coarse sandy loam	No Data	N/A	N/A
E	9.6	9.7	GsC,VsD2,VsE2,	Greenfield sandy loam, Vista coarse sandy loam	No Data	N/A	N/A
E	9.7	9.8	GsC,VsD2,	Greenfield sandy loam, Vista coarse sandy loam	No Data	N/A	N/A
E	9.8	10.0	GsC	Greenfield sandy loam	No Data	N/A	N/A
E	10.0	10.1	GsA,GsC,	Greenfield sandy loam	No Data	N/A	N/A
E	10.1	10.2	GsA,	Greenfield sandy loam	No Data	N/A	N/A
E	10.2	10.3	GsA,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	No Data	N/A	N/A
E	10.3	10.4	HbA,RcB,	Hanford coarse sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
E	10.4	10.5	GsA,HbA,RcB,	Greenfield sandy loam, Hanford coarse sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
E	10.5	10.6	GsA,	Greenfield sandy loam	No Data	N/A	N/A

TABLE A-10 – IMPACT ASSESSMENT TABLE
Geologic Feature: Linear Extensibility Percent

Location			Feature			Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Linear Extensibility Percent	Initial	Residual
E	10.6	10.7	GsA,GsC,	Greenfield sandy loam	No Data	N/A	N/A
E	10.7	10.9	GsC	Greenfield sandy loam	No Data	N/A	N/A
E	10.9	11.1	GsC2,	Greenfield sandy loam	No Data	N/A	N/A
E	11.1	11.3	GsC	Greenfield sandy loam	No Data	N/A	N/A
G	0.0	1.0	GsC	Greenfield sandy loam	No Data	N/A	N/A
G	1.0	1.1	GsC,GsD2,	Greenfield sandy loam	No Data	N/A	N/A
G	1.1	1.2	GsA,GsC2,GsD2,	Greenfield sandy loam	No Data	N/A	N/A
G	1.2	1.3	GsA,GsC2,	Greenfield sandy loam	No Data	N/A	N/A
G	1.3	1.4	GsA,HfA,	Greenfield sandy loam, Hanford loam	No Data	N/A	N/A
G	1.4	1.5	GsA,GsC,HfA,	Greenfield sandy loam, Hanford loam	No Data	N/A	N/A
G	1.5	1.7	GsC,HfA,TsF,	Greenfield sandy loam, Hanford loam , Terrace escarpments	No Data	N/A	N/A
G	1.7	1.9	GsC2,	Greenfield sandy loam	No Data	N/A	N/A
G	1.9	2.0	GsC2,GsD2,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
G	2.0	2.1	GsC,GsD2,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
G	2.1	2.2	GsC,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
G	2.2	2.3	GsC	Greenfield sandy loam	No Data	N/A	N/A
G	2.3	2.5	GsC,RcC,	Greenfield sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
G	2.5	3.2	RcC,	Ramona coarse sandy loam	No Data	N/A	N/A
G	3.2	3.4	GsC,RcC,	Greenfield sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
G	3.4	3.5	GsC2,RcC,	Greenfield sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
G	3.5	3.6	GsC2,RcC,TsF,	Greenfield sandy loam, Ramona coarse sandy loam, Terrace escarpments	No Data	N/A	N/A
G	3.6	3.7	GsC2,HbD,RcC,RcD,	Greenfield sandy loam, Hanford coarse sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
G	3.7	3.8	HbD,RcC,RcD,	Hanford coarse sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
G	3.8	3.9	HbD,RcC,TsF,	Hanford coarse sandy loam, Ramona coarse sandy loam, Terrace escarpments	No Data	N/A	N/A
G	3.9	4.0	HbD,TsF,VsF2,	Hanford coarse sandy loam, Terrace escarpments, Vista coarse sandy loam	No Data	N/A	N/A
G	4.0	4.2	AmF2,HbD,VsF2,	Amargosa rocky coarse sandy loam, Hanford coarse sandy loam, Vista coarse sandy loam	No Data	N/A	N/A
G	4.2	4.3	AmF2,VsF2,	Amargosa rocky coarse sandy loam, Vista coarse sandy loam	No Data	N/A	N/A
G	4.3	4.6	AmF2,	Amargosa rocky coarse sandy loam	No Data	N/A	N/A
G	4.6	4.8	AmF2,VsF2,	Amargosa rocky coarse sandy loam, Vista coarse sandy loam	No Data	N/A	N/A
G	4.8	4.9	VsF2,	Vista coarse sandy loam	No Data	N/A	N/A
G	4.9	5.1	RdE2,VsF2,	Ramona sandy loam, Vista coarse sandy loam	No Data	N/A	N/A
G	5.1	5.2	RcC,RdE2,	Ramona coarse sandy loam, Ramona sandy loam	No Data	N/A	N/A
G	5.2	5.3	HbC,RcC,RdE2,	Hanford coarse sandy loam, Ramona coarse sandy loam, Ramona sandy loam	No Data	N/A	N/A
G	5.3	5.4	HbC,VsF2,	Hanford coarse sandy loam, Vista coarse sandy loam	No Data	N/A	N/A
G	5.4	5.5	Co,HbC,VsF2,	Chino loam, Hanford coarse sandy loam, Vista coarse sandy loam	No Data	N/A	N/A
G	5.5	5.6	Co,YoC,	Chino Loam, Yolo loam	No Data	N/A	N/A
G	5.6	5.7	Co,MhF2,YoC,	Chino Loam, Millsholm rocky loam, Yolo loam	No Data	N/A	N/A
G	5.7	5.9	MhF2,YoC,	Millsholm rocky loam, Yolo loam	No Data	N/A	N/A
G	5.9	6.0	HcC,MhF2,YoC,	Hanford sandy loam, Millsholm rocky loam, Yolo loam	No Data	N/A	N/A
G	6.0	6.1	AmF2,HcC,MhF2,VsE2,YoC,	Amargosa rocky coarse sandy loam, Hanford sandy loam, Millsholm rocky loam, Vista coarse sandy loam, Yolo loam	No Data	N/A	N/A
G	6.1	6.2	AmF2,HcC,HdC,VsE2,	Amargosa rocky coarse sandy loam, Hanford sandy loam, Hanford gravelly sandy loam, Vista coarse sandy loam	No Data	N/A	N/A

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TABLE A-10 – IMPACT ASSESSMENT TABLE
Geologic Feature: Linear Extensibility Percent

Location			Feature			Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Linear Extensibility Percent	Initial	Residual
G	6.2	6.4	AmF2,	Amargosa rocky coarse sandy loam	No Data	N/A	N/A
G	6.4	6.5	46,AmF2,	Caperton-San Andreas-Modesto families complex, Amargosa rocky coarse sandy loam	No Data	N/A	N/A
G	6.5	6.8	46,	Caperton-San Andreas-Modesto families complex	No Data	N/A	N/A
G	6.8	7.2	36,46,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Caperton-San Andreas-Modesto families complex	No Data	N/A	N/A
G	7.2	7.4	36,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	No Data	N/A	N/A
G	7.4	7.5	36,39,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Tujunga-Capistrano families association	No Data	N/A	N/A
G	7.5	7.6	36,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	No Data	N/A	N/A
G	7.6	7.8	36,39,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Tujunga-Capistrano families association	No Data	N/A	N/A
G	7.8	7.9	39,	Tujunga-Capistrano families association	No Data	N/A	N/A
G	7.9	8.1	36,39,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Tujunga-Capistrano families association	No Data	N/A	N/A
G	8.1	8.8	39,	Tujunga-Capistrano families association	No Data	N/A	N/A
G	8.8	9.0	36,39,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Tujunga-Capistrano families association	No Data	N/A	N/A
G	9.0	9.3	36,	Tujunga-Capistrano families association	No Data	N/A	N/A
G	9.3	10.4	36,39,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Tujunga-Capistrano families association	No Data	N/A	N/A
G	10.4	10.6	39,	Tujunga-Capistrano families association	No Data	N/A	N/A
G	10.6	10.8	36,39,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Tujunga-Capistrano families association	No Data	N/A	N/A
G	10.8	10.9	36,46,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Caperton-San Andreas-Modesto families complex	No Data	N/A	N/A
G	10.9	11.3	46,	Caperton-San Andreas-Modesto families complex	No Data	N/A	N/A
G	11.3	11.4	36,46,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Caperton-San Andreas-Modesto families complex	No Data	N/A	N/A
G	11.4	12.3	36,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	No Data	N/A	N/A
G	12.3	12.4	35,36,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	No Data	N/A	N/A
G	12.4	12.5	35,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	No Data	N/A	N/A
G	12.5	12.6	26,35,	Stonyford-Millsholm families complex, Trigo granitic substratum-Exchequer families-Rock outcrop complex	No Data	N/A	N/A
G	12.6	13.9	26,	Stonyford-Millsholm families complex	No Data	N/A	N/A
G	13.9	14.0	26,8,	Stonyford-Millsholm families complex, Lodo-Modesto families complex	No Data	N/A	N/A
G	14.0	19.2	8,	Lodo-Modesto families complex	No Data	N/A	N/A
G	19.2	19.4	15,8,	Calciserollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex, Lodo-Modesto families complex	No Data	N/A	N/A
G	19.4	19.5	15,	Calciserollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data	N/A	N/A

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TABLE A-10 – IMPACT ASSESSMENT TABLE
Geologic Feature: Linear Extensibility Percent

Location			Feature			Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Linear Extensibility Percent	Initial	Residual
G	19.5	19.8	12,15,	Mollic Haploxeralfs, Calciserollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data	N/A	N/A
G	19.8	20.9	12,	Mollic Haploxeralfs	No Data	N/A	N/A
G	20.9	21.1	12,15,	Mollic Haploxeralfs, Calciserollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data	N/A	N/A
G	21.1	21.2	15,	Calciserollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data	N/A	N/A
GV	0.0	0.7	AmF2	Amargosa rocky coarse sandy loam	No Data	N/A	N/A
GV	0.7	0.9	46, AmF2	Caperton-San Andreas-Modesto families complex, Amargosa rocky coarse sandy loam	No Data	N/A	N/A
GV	0.9	1.1	46	Caperton-San Andreas-Modesto families complex	No Data	N/A	N/A
GV	1.1	1.2	46, 7	Caperton-San Andreas-Modesto families complex; Hanford family	No Data	N/A	N/A
GV	1.2	1.8	46	Caperton-San Andreas-Modesto families complex	No Data	N/A	N/A
GV	1.8	2.1	35, 46	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Caperton-San Andreas-Modesto families complex	No Data	N/A	N/A
GV	2.1	2.2	35, 36, 46	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Tujunga-Capistrano families association; Caperton San Andreas-Modesto families complex	No Data	N/A	N/A
GV	2.2	2.4	36, 46	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Caperton-San Andreas-Modesto families complex	No Data	N/A	N/A
GV	2.4	2.5	46	Caperton-San Andreas-Modesto families complex	No Data	N/A	N/A
GV	2.5	2.6	36, 46	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Caperton-San Andreas-Modesto families complex	No Data	N/A	N/A
GV	2.6	2.7	35, 36, 46	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Tujunga-Capistrano families association Caperton-San Andreas-Modesto families complex	No Data	N/A	N/A
GV	2.7	3.0	35	Trigo granitic substratum-Exchequer families-Rock outcrop complex	No Data	N/A	N/A
GV	3.0	3.6	35, 36	Trigo granitic substratum-Exchequer families-Rock outcrop complex	No Data	N/A	N/A
GV	5.8	6.0	36, 46	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Caperton-San Andreas-Modesto families complex	No Data	N/A	N/A
GV	6.0	6.5	46	Caperton-San Andreas-Modesto families complex	No Data	N/A	N/A
F1	0.0	0.2	GsC	Greenfield sandy loam	No Data	N/A	N/A
F2	0.2	0.3	GsC,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	No Data	N/A	N/A
F2	0.3	0.4	GsA,HbA,RcA,	Greenfield sandy loam, Hanford coarse sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
F2	0.4	0.5	RcA,	Ramona coarse sandy loam	No Data	N/A	N/A
F2	0.5	0.6	HcA,RcA,	Hanford sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
F2	0.6	0.7	GsC2,HcA,RcA,	Greenfield sandy loam, Hanford sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
F2	0.7	0.8	GsC2,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
F2	0.8	1.1	GsC	Greenfield sandy loam	No Data	N/A	N/A
F2	1.1	1.3	GsA,GsC,	Greenfield sandy loam	No Data	N/A	N/A
F2	1.3	1.7	GsA,	Greenfield sandy loam	No Data	N/A	N/A
F2	1.7	2.1	GsA,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
F2	2.1	2.3	RcA,	Ramona coarse sandy loam	No Data	N/A	N/A
F2	2.3	2.5	GsC,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
F2	2.5	2.8	GsC	Greenfield sandy loam	No Data	N/A	N/A

TABLE A-10 – IMPACT ASSESSMENT TABLE
Geologic Feature: Linear Extensibility Percent

Location			Feature			Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Linear Extensibility Percent	Initial	Residual
115	0.0	0.2	GsC	Greenfield sandy loam	No Data	N/A	N/A
115	0.2	0.3	GsC,GsD2,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	No Data	N/A	N/A
115	0.3	0.4	HbA,RcA,	Hanford sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
115	0.4	0.7	RcA,	Ramona coarse sandy loam	No Data	N/A	N/A
115	0.7	0.8	GsC2,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
115	0.8	0.9	GsC2,	Greenfield sandy loam	No Data	N/A	N/A
115	0.9	1.0	GsA,GsC,	Greenfield sandy loam	No Data	N/A	N/A
115	1.0	1.1	GsA,	Greenfield sandy loam	No Data	N/A	N/A
115	1.1	1.5	GsA,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
115	1.5	1.6	GsA,RcA,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
115	1.6	1.7	GsA,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
115	1.7	1.8	GsA,GsC,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
115	1.8	1.9	GsA,GsC,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
115	1.9	2.0	GsC,RcA,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
115	2.0	2.1	GsC,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
115	2.1	2.6	GsC	Greenfield sandy loam	No Data	N/A	N/A
115	2.6	2.7	GsC,RcC,	Greenfield sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
115	2.7	2.9	RcC,	Ramona coarse sandy loam	No Data	N/A	N/A
115	2.9	3.0	RcC,TsF,	Ramona coarse sandy loam, Terrace escarpments	No Data	N/A	N/A
115	3.0	3.1	HbC,RcC,TsF,	Hanford coarse sandy loam, Ramona coarse sandy loam, Terrace escarpments	No Data	N/A	N/A
115	3.1	3.2	HbC,RcC,RcD,TsF,	Hanford coarse sandy loam, Ramona coarse sandy loam, Terrace escarpments	No Data	N/A	N/A
115	3.2	3.3	HbC,RcD,TsF,	Hanford coarse sandy loam, Ramona coarse sandy loam, Terrace escarpments	No Data	N/A	N/A
115	3.3	3.5	HbC,TsF,	Hanford coarse sandy loam, Terrace escarpments	No Data	N/A	N/A
115	3.5	3.6	TsF,	Terrace escarpments	No Data	N/A	N/A
115	3.6	3.7	TsF,VsE2,	Terrace escarpments, Vista coarse sandy loam	No Data	N/A	N/A
115	3.7	3.8	RcC,RcD,TsF,VsE2,	Ramona coarse sandy loam, Terrace escarpments, Vista coarse sandy loam	No Data	N/A	N/A
115	3.8	3.9	RcB,RcC,RcD,TsF,VsF2,	Ramona coarse sandy loam, Terrace escarpments, Vista coarse sandy loam	No Data	N/A	N/A
115	3.9	4.0	RcB,RcD,TsF,VsF2,	Ramona coarse sandy loam, Terrace escarpments, Vista coarse sandy loam	No Data	N/A	N/A
115	4.0	4.1	RcB,RcC,TsF,VsF2,	Ramona coarse sandy loam, Terrace escarpments, Vista coarse sandy loam	No Data	N/A	N/A
115	4.1	4.2	HbC,RcC,TsF,VsF2,	Hanford coarse sandy loam, Ramona coarse sandy loam, Terrace escarpments, Vista coarse sandy loam	No Data	N/A	N/A
115	4.2	4.3	HbC,VsF,VsF2,	Hanford coarse sandy loam, Vista coarse sandy loam	No Data	N/A	N/A
115	4.3	4.4	HbC,VsF,	Hanford coarse sandy loam, Vista coarse sandy loam	No Data	N/A	N/A
115	4.5	4.6	HbC,VsF,VsF2,	Hanford coarse sandy loam, Vista coarse sandy loam	No Data	N/A	N/A
115	4.6	4.7	HbC,VsE,	Hanford coarse sandy loam, Vista coarse sandy loam	No Data	N/A	N/A
115	4.7	4.8	AmF2,HbC,HdC,VsE,	Amargosa rocky coarse sandy loam, Hanford coarse sandy loam, Vista coarse sandy loam	No Data	N/A	N/A
H1	0.0	0.1	GsC	Greenfield sandy loam	No Data	N/A	N/A
H1	0.1	0.4	GsC,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
H1	0.4	0.8	GsC	Greenfield sandy loam	No Data	N/A	N/A
H1	0.8	1.1	GsC,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
H1	1.1	1.4	RcB,	Ramona coarse sandy loam	No Data	N/A	N/A
H1	1.4	1.6	GsC,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A
H1	1.6	1.7	GsC		No Data	N/A	N/A
H1	1.7	1.9	GsC,RcC,	Greenfield sandy loam, Ramona coarse sandy loam	No Data	N/A	N/A

TABLE A-10 – IMPACT ASSESSMENT TABLE
Geologic Feature: Linear Extensibility Percent

Location			Feature			Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Linear Extensibility Percent	Initial	Residual
H1	1.9	2.0	GsC,RcC,TsF,	Greenfield sandy loam, Ramona coarse sandy loam, Terrace escarpments	No Data	N/A	N/A
H1	2.0	2.1	RcC,TsF,	Ramona coarse sandy loam, Terrace escarpments	No Data	N/A	N/A
H1	2.1	2.3	HbC,RcC,VsF2,	Hanford coarse sandy loam, Ramona coarse sandy loam, Vista coarse sandy loam	No Data	N/A	N/A
H1	2.3	2.5	VsF2,	Vista coarse sandy loam	No Data	N/A	N/A
H1	2.5	2.6	HbC,VsE,VsF2,	Hanford coarse sandy loam, Vista coarse sandy loam	No Data	N/A	N/A
H1	2.6	2.7	AmF2,HbC,HdC,VsE,	Amargosa rocky coarse sandy loam, Hanford coarse sandy loam, Hanford gravelly sandy loam, Vista coarse sandy loam	No Data	N/A	N/A
H2	0.0	0.3	AmF2,HdC,	Amargosa rocky coarse sandy loam, Hanford gravelly sandy loam	No Data	N/A	N/A
H2	0.3	0.4	AmF2,VsE2,	Amargosa rocky coarse sandy loam, Vista coarse sandy loam	No Data	N/A	N/A
H2	0.4	0.5	AmF2,VsE2,VsF,	Amargosa rocky coarse sandy loam, Vista coarse sandy loam	No Data	N/A	N/A
H2	0.5	0.6	VsF,	Vista coarse sandy loam	No Data	N/A	N/A
H2	0.6	0.8	HbC,VsF,VsF2,	Hanford coarse sandy loam, Vista coarse sandy loam	No Data	N/A	N/A
H2	0.8	1.0	GsC,HbC,VsF2,	Greenfield sandy loam, Hanford coarse sandy loam, Vista coarse sandy loam	No Data	N/A	N/A
H2	1.0	1.1	Co,GsC,HbC,	Chino loam, Greenfield sandy loam, Hanford coarse sandy loam	No Data	N/A	N/A
H2	1.1	1.2	GaE2,GsC,MhE2,	Gaviota rocky sandy loam, Greenfield sandy loam, Millsholm rocky loam	No Data	N/A	N/A
H2	1.2	1.3	GaE2,MhE2,	Gaviota rocky sandy loam, Millsholm rocky loam	No Data	N/A	N/A
H2	1.3	1.4	CmF2,MhE2,	Castaic-Balcom silty clay loams, Millsholm rocky loam	No Data	N/A	N/A
H2	1.4	1.5	CmF2,MhE2,RdE2,YoC,	Castaic-Balcom silty clay loams, Millsholm rocky loam, Ramona sandy loam, Yolo loam	No Data	N/A	N/A
H2	1.5	1.6	HbC,RdE2,YoC,	Hanford coarse sandy loam, Ramona sandy loam, Yolo loam	No Data	N/A	N/A
H2	1.6	1.7	Co,HbC,YoC,	Chino loam, Hanford coarse sandy loam, Yolo loam	No Data	N/A	N/A
H2	1.7	1.8	Co,GsC,	Chino loam, Greenfield sandy loam	No Data	N/A	N/A
H2	1.8	1.9	AmF2,GsC,	Amargosa rocky coarse sandy loam, Greenfield sandy loam	No Data	N/A	N/A
H2	1.9	2.5	AmF2,	Amargosa rocky coarse sandy loam	No Data	N/A	N/A
H2	2.5	2.6	35,AmF2,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Amargosa rocky coarse sandy loam	No Data	N/A	N/A
H2	2.6	3.7	35,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	No Data	N/A	N/A
H2	3.7	3.8	35,36,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	No Data	N/A	N/A
H2	3.8	4.5	36,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	No Data	N/A	N/A
H2	4.5	4.7	35,36,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	No Data	N/A	N/A
H2	4.7	5.1	35,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	No Data	N/A	N/A
H2	5.1	5.2	35,37,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Lodo-Tujunga families association	No Data	N/A	N/A
H2	5.2	5.3	37,	Lodo-Tujunga families complex	No Data	N/A	N/A
H2	5.3	5.4	37,8,	Lodo-Tujunga families complex, Lodo-Modesto families complex	No Data	N/A	N/A

TABLE A-10 – IMPACT ASSESSMENT TABLE
Geologic Feature: Linear Extensibility Percent

Location			Feature			Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Linear Extensibility Percent	Initial	Residual
H2	5.4	12.8	8,	Lodo-Modesto families complex	No Data	N/A	N/A
H2	12.8	12.9	1,8,	Exchequer family, Lodo-Modesto families complex	No Data	N/A	N/A
H2	12.9	14.4	1,	Exchequer family	No Data	N/A	N/A
H2	14.4	14.5	1,8,	Exchequer family, Lodo-Modesto families complex	No Data	N/A	N/A
H2	14.5	15.2	8,	Lodo-Modesto families complex	No Data	N/A	N/A
H2	15.2	15.5	15,8,	Calcixerollic Xerochrepts-Calleguas family-Modesto family moderately deep complex, Lodo-Modesto families complex	No Data	N/A	N/A
H2	15.5	15.6	15,	Calcixerollic Xerochrepts-Calleguas family-Modesto family moderately deep complex	No Data	N/A	N/A
H2	15.6	15.8	15,7,	Calcixerollic Xerochrepts-Calleguas family-Modesto family moderately deep complex, Hanford family	No Data	N/A	N/A
H2	15.8	16.1	15,	Calcixerollic Xerochrepts-Calleguas family-Modesto family moderately deep complex	No Data	N/A	N/A
H2	16.1	16.3	15,7,	Calcixerollic Xerochrepts-Calleguas family-Modesto family moderately deep complex, Hanford family	No Data	N/A	N/A
H2	16.3	16.6	15,	Calcixerollic Xerochrepts-Calleguas family-Modesto family moderately deep complex	No Data	N/A	N/A
H2	16.6	16.8	15,7,	Calcixerollic Xerochrepts-Calleguas family-Modesto family moderately deep complex, Hanford family	No Data	N/A	N/A
H2	16.8	17.1	15,	Calcixerollic Xerochrepts-Calleguas family-Modesto family moderately deep complex	No Data	N/A	N/A
I	0.0	1.4	GsC	Greenfield sandy loam	No Data	N/A	N/A
I	1.4	1.8	GsC,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	No Data	N/A	N/A
I	1.8	1.9	GsC	Greenfield sandy loam	No Data	N/A	N/A
I	1.9	2.0	GsC,HbC,HcC,	Greenfield sandy loam, Hanford coarse sandy loam, Hanford sandy loam	No Data	N/A	N/A
I	2.0	2.3	HbC,	Hanford coarse sandy loam	No Data	N/A	N/A
I	2.3	2.4	GsC,HbC,	Greenfield sandy loam	No Data	N/A	N/A
I	2.4	2.5	GsC	Greenfield sandy loam	No Data	N/A	N/A
I	2.5	2.6	GsC,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	No Data	N/A	N/A
I	2.6	2.8	HbC,	Hanford coarse sandy loam	No Data	N/A	N/A
I	2.8	3.1	GsC2,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	No Data	N/A	N/A
I	3.1	3.3	HbC,	Hanford coarse sandy loam	No Data	N/A	N/A
I	3.3	3.5	HbC,HbD,	Hanford coarse sandy loam, Handford coarse sandy loam	No Data	N/A	N/A
I	3.5	3.6	GsC,HbC,HbD,	Greenfield sandy loam, Hanford coarse sandy loam, Handford coarse sandy loam	No Data	N/A	N/A
I	3.6	3.7	GsC,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	No Data	N/A	N/A
I	3.7	3.8	HbC,HbD,	Hanford coarse sandy loam, Handford coarse sandy loam	No Data	N/A	N/A
I	3.8	4.2	HbD,	Hanford coarse sandy loam	No Data	N/A	N/A
I	4.2	4.4	GsC,HbD,	Greenfield sandy loam, Hanford coarse sandy loam	No Data	N/A	N/A
I	4.4	4.6	HbD,TsF,	Hanford coarse sandy loam, Terrace escarpments	No Data	N/A	N/A
I	4.6	4.8	HbD,TsF,VsF2,	Hanford coarse sandy loam, Terrace escarpments, Vista coarse sandy loam	No Data	N/A	N/A
I	4.8	4.9	HbD,VsF2,	Hanford coarse sandy loam, Vista coarse sandy loam	No Data	N/A	N/A
I	4.9	5.6	VsF2,	Vista coarse sandy loam	No Data	N/A	N/A
I	5.6	5.8	VsF,VsF2,	Vista coarse sandy loam	No Data	N/A	N/A
I	5.8	6.6	VsF,	Vista coarse sandy loam	No Data	N/A	N/A
I	6.6	6.7	HcC,VsF,	Hanford sandy loam, Vista coarse sandy loam	No Data	N/A	N/A

TABLE A-10 – IMPACT ASSESSMENT TABLE
Geologic Feature: Linear Extensibility Percent

Location			Feature			Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Linear Extensibility Percent	Initial	Residual
I	6.7	6.8	AmF2,HcC,VsF,	Amargosa rocky coarse sandy loam, Hanford sandy loam, Vista coarse sandy loam	No Data	N/A	N/A
I	6.8	7.0	AmF2,	Amargosa rocky coarse sandy loam	No Data	N/A	N/A
I	7.0	7.2	AmF2,GdF,	Amargosa rocky coarse sandy loam, Godde rocky loam	No Data	N/A	N/A
I	7.2	7.5	GdF,	Godde rocky loam	No Data	N/A	N/A
I	7.5	8.0	GdF,HbC,	Godde rocky loam, Hanford coarse sandy loam	No Data	N/A	N/A
I	8.0	8.3	GcE,HbC,	Godde loam, Hanford coarse sandy loam	No Data	N/A	N/A
I	8.3	8.7	GcE,	Godde loam	No Data	N/A	N/A
I	8.7	8.8	GcE,GdF,	Godde loam, Godde rocky loam	No Data	N/A	N/A
I	8.8	8.9	GcE,GdF,WgD,	Godde loam, Godde rocky loam, Wyman gravelly loam	No Data	N/A	N/A
I	8.9	9.2	GcE,WgD,	Godde loam, Wyman gravelly loam	No Data	N/A	N/A
I	9.2	9.9	GcE,HbC,	Godde loam, Hanford coarse sandy loam	No Data	N/A	N/A
I	9.9	10.1	GcE,HbC,HcC,	Godde loam, Hanford coarse sandy loam, Hanford sandy loam	No Data	N/A	N/A
I	10.1	10.3	HbC,HcC,	Hanford coarse sandy loam, Hanford sandy loam	No Data	N/A	N/A
I	10.3	10.5	GcE,HbC,	Godde loam, Hanford coarse sandy loam	No Data	N/A	N/A
I	10.5	10.6	ApF,GcE,HbC,	Anaverde rocky loam, Godde loam, Hanford coarse sandy loam	No Data	N/A	N/A
I	10.6	10.7	ApF,	Anaverde rocky loam	No Data	N/A	N/A
I	10.7	10.8	ApF,GdF,	Anaverde rocky loam, Godde rocky loam	No Data	N/A	N/A
I	10.8	12.1	ApF,	Anaverde rocky loam	No Data	N/A	N/A
I	12.1	12.5	ApF,GdF,	Anaverde rocky loam, Godde rocky loam	No Data	N/A	N/A
I	12.5	12.6	ApF,	Anaverde rocky loam	No Data	N/A	N/A
I	12.6	12.7	ApF,GdF,	Anaverde rocky loam, Godde rocky loam	No Data	N/A	N/A
I	12.7	13.7	GdF,	Godde rocky loam	No Data	N/A	N/A
I	13.7	13.8	AnE,ApF,GdF,	Anaverde loam, Anaverde rocky loam, Godde rocky loam	No Data	N/A	N/A
I	13.8	13.9	AnE,GdF,	Anaverde loam, Godde rocky loam	No Data	N/A	N/A
I	13.9	14.7	GdF,	Godde rocky loam	No Data	N/A	N/A
I	14.7	15.1	CzC,GdF,	Cortina cobbly sandy loam, Godde rocky loam	No Data	N/A	N/A
I	15.1	15.5	GdF,	Godde rocky loam	No Data	N/A	N/A
I	15.5	15.6	GdF,WoC,	Godde rocky loam, Wyman cobbly loam	No Data	N/A	N/A
I	15.6	15.7	GdF,	Godde rocky loam	No Data	N/A	N/A
I	15.7	15.9	GdF,WoC,	Godde rocky loam, Wyman cobbly loam	No Data	N/A	N/A
I	15.9	16.0	GdF,TsF,WgC,WoC,	Godde rocky loam, Terrace escarpments, Wyman gravelly loam, Wyman cobbly loam	No Data	N/A	N/A
I	16.0	16.1	GdF,WgD,WoC,	Godde rocky loam,Wyman gravelly loam, Wyman cobbly loam	No Data	N/A	N/A
I	16.1	16.3	GdF,WgD,	Godde rocky loam,Wyman gravelly loam	No Data	N/A	N/A
I	16.3	16.5	GdF,	Godde rocky loam	No Data	N/A	N/A
I	16.5	16.6	8,GdF,	Lodo-modesto families complex, Godde rocky loam	No Data	N/A	N/A
I	16.6	16.7	1,8,GdF,	Exchequer family, Lodo-modesto families complex, Godde rocky loam	No Data	N/A	N/A
I	16.7	16.9	1,8,	Exchequer family, Lodo-modesto families complex	No Data	N/A	N/A
I	16.9	17.0	1,6,8,	Exchequer family, Typic haploxeralfs, Lodo-modesto families complex	No Data	N/A	N/A
I	17.0	17.1	1,6,	Exchequer family, Typic haploxeralfs	No Data	N/A	N/A
I	17.1	17.6	1,	Exchequer family	No Data	N/A	N/A
I	17.6	18.0	1,6,	Exchequer family, Typic haploxeralfs	No Data	N/A	N/A
I	18.0	18.1	1,6,8,	Exchequer family, Typic haploxeralfs, Lodo-modesto families complex	No Data	N/A	N/A
I	18.1	18.2	6,8,WgC,	Typic haploxeralfs, Lodo-modesto families complex, Wyman gravelly loam	No Data	N/A	N/A

TABLE A-10 – IMPACT ASSESSMENT TABLE
Geologic Feature: Linear Extensibility Percent

Location			Feature			Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Linear Extensibility Percent	Initial	Residual
I	18.2	18.3	6,AmF2,WgC,	Typic haploxeralfs, Amargosa rocky coarse sandy loam, Wyman gravelly loam	No Data	N/A	N/A
I	18.3	18.4	AmF2,TsF,WgC,	Amargosa rocky coarse sandy loam, Terrace escarpments, Wyman gravelly loam	No Data	N/A	N/A
I	18.4	18.5	AmF2,TsF,VsE,	Amargosa rocky coarse sandy loam, Terrace escarpments, Vista coarse sandy loam	No Data	N/A	N/A
I	18.5	18.0	AmF2,VsE,	Amargosa rocky coarse sandy loam, Vista coarse sandy loam	No Data	N/A	N/A
I	18.7	19.2	AmF2,	Amargosa rocky coarse sandy loam	No Data	N/A	N/A
I	19.2	19.5	AmF2,GsC,	Amargosa rocky coarse sandy loam, Greenfield sandy loam	No Data	N/A	N/A
I	19.5	23.0	AmF2,	Amargosa rocky coarse sandy loam	No Data	N/A	N/A
I	23.0	23.1	AmF2,HcA,	Amargosa rocky coarse sandy loam, Hanford sandy loam	No Data	N/A	N/A
I	23.1	23.2	1,AmF2,HcA,	Exchequer family, Amargosa rocky coarse sandy loam, Hanford sandy loam	No Data	N/A	N/A
I	23.2	23.3	1,7,AmF2,HcA,	Exchequer family, Hanford family, Amargosa rocky coarse sandy loam, Hanford sandy loam	No Data	N/A	N/A
I	23.3	23.8	1,	Exchequer family	No Data	N/A	N/A
I	23.8	24.3	1,AmF2,	Exchequer family, Amargosa rocky coarse sandy loam	No Data	N/A	N/A
I	24.3	24.4	1,AmF2,CmF2,	Exchequer family, Amargosa rocky coarse sandy loam, Castaic-Balcom silty clay loams	No Data	N/A	N/A
I	24.4	24.5	1,15,AmF2,CmF2,	Exchequer family, Calcixerollic xerochrepts-Calleguas family-Modesto family, moderately deep complex, Amargosa rocky coarse sandy loam, Castaic-Balcom silty clay loams	No Data	N/A	N/A
I	24.5	24.6	15,CmF2,	Calcixerollic xerochrepts-Calleguas family-Modesto family, moderately deep complex, Castaic-Balcom silty clay loams	No Data	N/A	N/A
I	24.6	25.5	CmF2,	Castaic-Balcom silty clay loams	No Data	N/A	N/A
I	25.5	26.4	CmF2,HcC,	Castaic-Balcom silty clay loams, Hanford sandy loam	No Data	N/A	N/A
I	26.4	27.0	CmF2,	Castaic-Balcom silty clay loams	No Data	N/A	N/A
I	27.0	27.3	CmF2,CnG3,	Castaic-Balcom silty clay loams, Castaic and Saugus soils	No Data	N/A	N/A
I	27.3	27.6	CmF2,CzC,	Castaic-Balcom silty clay loams, Cortina cobbly sandy loam	No Data	N/A	N/A
I	27.6	27.7	CzC,	Cortina cobbly sandy loam	No Data	N/A	N/A
I	27.7	27.8	CmF2,CzC,	Castaic-Balcom silty clay loams, Cortina cobbly sandy loam	No Data	N/A	N/A
I	27.8	27.9	CmF2,CyC,CzC,	Castaic-Balcom silty clay loams, Cortina sandy loam, Cortina cobbly sandy loam	No Data	N/A	N/A
I	27.9	28.0	CyC,CzC,	Cortina sandy loam, Cortina cobbly sandy loam	No Data	N/A	N/A
I	28.0	28.3	CyC,HcC,	Cortina sandy loam, Hanford sandy loam	No Data	N/A	N/A
I	28.3	28.4	CyC,HcC,MfA,	Cortina sandy loam, Hanford sandy loam, Metz loamy sand	No Data	N/A	N/A
I	28.4	28.5	HcC,MfA,MpC,	Hanford sandy loam, Metz loamy sand, Mocho loam	No Data	N/A	N/A
I	28.5	28.6	MfA,MpC,OgF,	Metz loamy sand, Mocho loam, Ojai loam	No Data	N/A	N/A
I	28.6	28.7	OgF,ZaC,	Ojai loam, Zamora loam	No Data	N/A	N/A
I	28.7	28.8	MpC,OgF,ZaC,	Mocho loam, Ojai loam, Zamora loam	No Data	N/A	N/A
I	28.8	28.9	CmF2,MpC,OgF,	Castaic-Balcom silty clay loams, Mocho loam, Ojai loam	No Data	N/A	N/A
I	28.9	29.0	CmF2,	Castaic-Balcom silty clay loams	No Data	N/A	N/A
I	29.0	29.3	CmF2,MpC,	Castaic-Balcom silty clay loams, Mocho loam	No Data	N/A	N/A
I	29.3	29.4	CmF2,MpC,ScF2,	Castaic-Balcom silty clay loams, Mocho loam, Saugus loam	No Data	N/A	N/A

TABLE A-10 – IMPACT ASSESSMENT TABLE
Geologic Feature: Linear Extensibility Percent

Location			Feature			Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Linear Extensibility Percent	Initial	Residual
I	29.4	29.5	MpC,ScF2,	Mocho loam, Saugus loam	No Data	N/A	N/A
I	29.5	30.4	ScF2,	Saugus loam	No Data	N/A	N/A
I	30.4	30.5	ScF2,YoC,	Saugus loam, Yolo loam	No Data	N/A	N/A
I	30.5	30.7	ScF2,	Saugus loam	No Data	N/A	N/A
I	30.7	30.8	CyC,ScF2,YoC,	Cortina sandy loam, Saugus loam, Yolo loam	No Data	N/A	N/A
I	30.8	30.9	CyC,HcC,ScF2,YoC,	Cortina sandy loam, Hanford sandy loam, Saugus loam, Yolo loam	No Data	N/A	N/A
I	30.9	31.0	HcC,ScF2,SsB,YoC,	Hanford sandy loam, Saugus loam, Sorrento loam, Yolo loam	No Data	N/A	N/A
I	31.0	31.1	CmF2,HcC,ScF2,SsB,	Castaic-Balcom silty clay loams, Hanford sandy loam, Saugus loam, Sorrento loam	No Data	N/A	N/A
I	31.1	31.3	HcC,ScF2,SsB,	Hanford sandy loam, Saugus loam, Sorrento loam	No Data	N/A	N/A
I	31.3	31.4	15,7,HcC,ScF2,	Calcixerollic Xerochrepts-Calleguas family-Modesto family moderately deep complex, Hanford family, Hanford sandy loam, Saugus loam	No Data	N/A	N/A
I	31.4	31.5	15,19,7,HcC,ScF2,	Calcixerollic Xerochrepts-Calleguas family-Modesto family moderately deep complex, Trigo family-Calcixerollic Xerochrepts-Vista family complex, Hanford family, Hanford sandy loam, Saugus loam	No Data	N/A	N/A
I	31.5	31.6	15,19,7,	Calcixerollic Xerochrepts-Calleguas family-Modesto family moderately deep complex, Trigo family-Calcixerollic Xerochrepts-Vista family complex, Hanford family	No Data	N/A	N/A
I	31.6	31.9	15,	Calcixerollic Xerochrepts-Calleguas family-Modesto family moderately deep complex	No Data	N/A	N/A
J	0.0	0.1	15	Calcixerollic Xerochrepts-Calleguas family-Modesto family moderately deep complex	No Data	N/A	N/A
J	0.1	0.3	12,15	Mollic Haploxeralfs, Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data	N/A	N/A
J	0.3	0.8	12	Mollic Haploxeralfs	No Data	N/A	N/A
J	0.8	0.9	12,15	Mollic Haploxeralfs, Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data	N/A	N/A
J	0.9	1.6	15	Calcixerollic Xerochrepts-Calleguas family-Modesto family moderately deep complex	No Data	N/A	N/A
J	1.6	1.7	15,CmF2	Calcixerollic Xerochrepts-Calleguas family-Modesto family moderately deep complex	No Data	N/A	N/A
J	1.7	1.8	CmF2,HcC,ScE,ZaC	Castaic-Balcom silty clay loams, Hanford sandy loam, Saugus loam, Zamora loam	No Data	N/A	N/A
J	1.8	1.9	MfC,ScE,ScF2,ZaC	Metz loamy sand, Saugus loam, Zamora loam	No Data	N/A	N/A
J	1.9	2.0	MfC,Sa	Metz loamy sand, Sandy alluvial land	No Data	N/A	N/A
J	2.0	2.1	HcC,Sa,ScF2	Hanford sandy loam, Sandy Alluvial land, Saugus loam	No Data	N/A	N/A
J	2.1	2.2	ScF2	Saugus loam	No Data	N/A	N/A
J	2.2	2.4	CnG3,ScF2	Castaic and Saugus soils, Saugus loam	No Data	N/A	N/A
J	2.4	2.6	CmF,CnG3,ScF2	Castaic-Balcom silty clay loams, Castaic and Saugus soils, Saugus loam	No Data	N/A	N/A
J	2.6	2.7	CmF,ScE,ScF2	Castaic-Balcom silty clay loams, Saugus loam	No Data	N/A	N/A
J	2.7	2.8	ScE,ScF2	Saugus loam	No Data	N/A	N/A
J	2.8	2.9	ScE	Saugus loam	No Data	N/A	N/A
J	2.9	3.0	12,CnG3,ScE	Mollic Haploxeralfs, Castaic and Saugus soils, Saugus loam	No Data	N/A	N/A
J	3.0	3.1	12,ScE	Mollic Haploxeralfs, Saugus loam	No Data	N/A	N/A
J	3.1	3.2	12	Mollic Haploxeralfs	No Data	N/A	N/A

TABLE A-10 – IMPACT ASSESSMENT TABLE
Geologic Feature: Linear Extensibility Percent

Location			Feature			Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Linear Extensibility Percent	Initial	Residual
J	3.2	3.4	12,26	Mollic Haploxeralfs, Stonyford-Millsholm families complex	No Data	N/A	N/A
J	3.4	3.6	26,7	Stonyford-Millsholm families complex, Hanford family	No Data	N/A	N/A
J	3.6	4.3	26	Stonyford-Millsholm families complex	No Data	N/A	N/A
J	4.3	4.5	26,7	Stonyford-Millsholm families complex, Hanford family	No Data	N/A	N/A
J	4.5	4.9	26	Stonyford-Millsholm families complex	No Data	N/A	N/A
J	4.9	5.0	26,CmF2	Stonyford-Millsholm families complex, Castaic-Balcom silty caly loams	No Data	N/A	N/A
J	5.0	5.1	26,CmF2,MhE2	Stonyford-Millsholm families complex, Castaic-Balcom silty caly loams, Millsholm rocky loam	No Data	N/A	N/A
J	5.1	5.2	MhE2	Millsholm rocky loam	No Data	N/A	N/A
J	5.2	5.4	CmF,MhE2	Castaic-Balcom silty clay loams, Millsholm rocky loam	No Data	N/A	N/A
J	5.4	5.7	CmF	Castaic-Balcom silty clay loams	No Data	N/A	N/A
J	5.7	5.8	CmF,DA	Castaic-Balcom silty clay loams, Dams	No Data	N/A	N/A
J	5.8	5.9	CmF,DA,Rg	Castaic-Balcom silty clay loams, Dams, Riverwash	No Data	N/A	N/A
J	5.9	6.0	CyA,DA,HcA,Rg	Cortina sandy loam, dams, Hanford sandy loam, Riverwash	No Data	N/A	N/A
J	6.0	6.1	CyA,DA,HcA,HcC	Cortina sandy loam, dams, Hanford sandy loam	No Data	N/A	N/A
J	6.1	6.2	CmF,DA,HcA,HcC	Castaic-Balcom silty clay loams, Dams, Hanford sandy loam	No Data	N/A	N/A
J	6.2	6.3	CmF,DA,HcC	Castaic-Balcom silty clay loams, Dams, Hanford sandy loam	No Data	N/A	N/A
J	6.3	6.5	CmF	Castaic-Balcom silty clay loams	No Data	N/A	N/A
J	6.5	6.8	CmE,CmF	Castaic-Balcom silty clay loams	No Data	N/A	N/A
J	6.8	7.6	CmF	Castaic-Balcom silty clay loams	No Data	N/A	N/A
J	7.6	8.1	CmE,CmF	Castaic-Balcom silty clay loams	No Data	N/A	N/A
J	8.1	10.0	CmF	Castaic-Balcom silty clay loams	No Data	N/A	N/A
J	10.0	10.3	CmF,MhF2	Castaic-Balcom silty clay loams, Millsholm rocky loam	No Data	N/A	N/A
J	10.3	10.6	MhF2	Millsholm rocky loam	No Data	N/A	N/A
J	10.6	10.8	CnG3,MhF2	Castaic and Saugus soils, Millsholm rocky loam	No Data	N/A	N/A
J	10.8	10.9	MhF2	Millsholm rocky loam	No Data	N/A	N/A
J	10.9	11.5	CnG3,MhF2	Castaic and Saugus soils, Millsholm rocky loam	No Data	N/A	N/A
J	11.5	11.7	MhF2	Millsholm rocky loam	No Data	N/A	N/A
J	11.7	11.9	CnG3,MhF2	Castaic and Saugus soils, Millsholm rocky loam	No Data	N/A	N/A
J	11.9	12.0	CyA,MhF2,YoC	Cortina sandy loam, Millsholm rocky loam, Yolo loam	No Data	N/A	N/A
K	0.0	0.3	15	Calcixerollic Xerochrepts-Calleguas family-Modesto family moderately deep complex	No Data	N/A	N/A
K	0.3	0.4	15,7	Calcixerollic Xerochrepts-Calleguas family-Modesto family moderately deep complex, Hanford family	No Data	N/A	N/A
K	0.4	0.5	15,7,HcC,ScF2	Calcixerollic Xerochrepts-Calleguas family-Modesto family moderately deep complex, Hanford family, Hanford sandy loam, Saugus loam	No Data	N/A	N/A
K	0.5	0.7	HcC,ScF2,SsB	Hanford sandy loam, Saugus loam, Sorrento loam	No Data	N/A	N/A
K	0.7	0.8	ScF2,SsB	Saugus loam, Sorrento loam	No Data	N/A	N/A
K	0.8	0.9	HcC,ScF2,SsB	Hanford sandy loam, Saugus loam, Sorrento loam	No Data	N/A	N/A
K	0.9	1.0	HcC,ScF2,YoC	Hanford sandy loam, Saugus loam, Yolo loam	No Data	N/A	N/A
K	1.0	1.1	ScF2,YoC	Saugus loam, Yolo loam	No Data	N/A	N/A
K	1.1	1.2	ScF2	Saugus loam	No Data	N/A	N/A
K	1.2	1.4	ScF2,YoC	Saugus loam, Yolo loam	No Data	N/A	N/A
K	1.4	1.5	HcC,ScF2,YoC	Hanford sandy loam, Saugus loam, Yolo loam	No Data	N/A	N/A
K	1.5	1.6	HcC,ScF2	Hanford sandy loam, Saugus loam	No Data	N/A	N/A
K	1.6	2.1	HcC,ScF2,YoC	Hanford sandy loam, Saugus loam, Yolo loam	No Data	N/A	N/A

TABLE A-11 – IMPACT ASSESSMENT TABLE
Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
G	1.0	1.1	GsC,GsD2,	Greenfield sandy loam	L, L	L, L	L	L
G	1.1	1.2	GsA,GsC2,GsD2,	Greenfield sandy loam	L, L, L	L, L, L	L	L
G	1.2	1.3	GsA,GsC2,	Greenfield sandy loam	L, L	L, L	L	L
G	1.3	1.4	GsA,HfA,	Greenfield sandy loam, Hanford loam	L, L	L, L	L	L
G	1.4	1.5	GsA,GsC,HfA,	Greenfield sandy loam, Hanford loam	L, L, L	L, L, L	L	L
G	1.5	1.7	GsC,HfA,TsF,	Greenfield sandy loam, Hanford loam , Terrace escarpments	L, L, No Data	L, L, No Data	L	L
G	1.7	1.9	GsC2,	Greenfield sandy loam	L	L	L	L
G	1.9	2.0	GsC2,GsD2,RcB	Greenfield sandy loam, Ramona coarse sandy loam	L, L, M	L, L, M	M	L
G	2.0	2.1	GsC,GsD2,RcB	Greenfield sandy loam, Ramona coarse sandy loam	L, L, M	L, L, M	M	L
G	2.1	2.2	GsC,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	L, M	L, M	M	L
G	2.2	2.3	GsC	Greenfield sandy loam	L	L	L	L
G	2.3	2.5	GsC,RcC,	Greenfield sandy loam, Ramona coarse sandy loam	L, M	L, M	M	L
G	2.5	3.2	RcC,	Ramona coarse sandy loam	M	M	M	L
G	3.2	3.4	GsC,RcC,	Greenfield sandy loam, Ramona coarse sandy loam	L, M	L, M	M	L
G	3.4	3.5	GsC2,RcC,	Greenfield sandy loam, Ramona coarse sandy loam	L, M	L, M	M	L
G	3.5	3.6	GsC2,RcC,TsF,	Greenfield sandy loam, Ramona coarse sandy loam, Terrace escarpments	L, M, No Data	L, M, No Data	M	L
G	3.6	3.7	GsC2,HbD,RcC,RcD,	Greenfield sandy loam, Hanford coarse sandy loam, Ramona coarse sandy loam	L, L, M, M	L, L, M, M	M	L
G	3.7	3.8	HbD,RcC,RcD,	Hanford coarse sandy loam, Ramona coarse sandy loam	L, M, M	L, M, M	M	L
G	3.8	3.9	HbD,RcC,TsF,	Hanford coarse sandy loam, Ramona coarse sandy loam, Terrace escarpments	L, M, No Data	L, M, No Data	M	L
G	3.9	4.0	HbD,TsF,VsF2,	Hanford coarse sandy loam, Terrace escarpments, Vista coarse sandy loam	L, No Data, L	L, No Data, L	L	L
G	4.0	4.2	AmF2,HbD,VsF2,	Amargosa rocky coarse sandy loam, Hanford coarse sandy loam, Vista coarse sandy loam	L, L, L	M, L, L	M	L
G	4.2	4.3	AmF2,VsF2,	Amargosa rocky coarse sandy loam, Vista coarse sandy loam	L, L	M, L	M	L
G	4.3	4.6	AmF2,	Amargosa rocky coarse sandy loam	L	M	M	L
G	4.6	4.8	AmF2,VsF2,	Amargosa rocky coarse sandy loam, Vista coarse sandy loam	L, L	M, L	M	L
G	4.8	4.9	VsF2,	Vista coarse sandy loam	L	L	L	L
G	4.9	5.1	RdE2,VsF2,	Ramona sandy loam, Vista coarse sandy loam	M, L	M, L	M	L
G	5.1	5.2	RcC,RdE2,	Ramona coarse sandy loam, Ramona sandy loam	M, M	M, M	M	L
G	5.2	5.3	HbC,RcC,RdE2,	Hanford coarse sandy loam, Ramona coarse sandy loam, Ramona sandy loam	L, M, M	L, M, M	M	L
G	5.3	5.4	HbC,VsF2,	Hanford coarse sandy loam, Vista coarse sandy loam	L, L	L, L	L	L
G	5.4	5.5	Co,HbC,VsF2,	Chino loam, Hanford coarse sandy loam, Vista coarse sandy loam	L, L, L	H, L, L	H	L
G	5.5	5.6	Co,YoC,	Chino Loam, Yolo loam	L, L	H, L	H	L
G	5.6	5.7	Co,MhF2,YoC,	Chino Loam, Millsholm rocky loam, Yolo loam	L, L, L	H, L, L	H	L
G	5.7	5.9	MhF2,YoC,	Millsholm rocky loam, Yolo loam	L, L	L, L	L	L

TABLE A-11 – IMPACT ASSESSMENT TABLE
Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
G	5.9	6.0	HcC,MhF2,YoC,	Hanford sandy loam, Millsholm rocky loam, Yolo loam	L, L, L	L, L, L	L	L
G	6.0	6.1	AmF2,HcC,MhF2,VsE2,YoC,	Amargosa rocky coarse sandy loam, Hanford sandy loam, Millsholm rocky loam, Vista coarse sandy loam, Yolo loam	L, L, L, L, L	M, L, L, L, L	M	L
G	6.1	6.2	AmF2,HcC,HdC,VsE2,	Amargosa rocky coarse sandy loam, Hanford sandy loam, Hanford gravelly sandy loam, Vista coarse sandy loam	L, L, L, L	M, L, L, L	M	L
G	6.2	6.4	AmF2,	Amargosa rocky coarse sandy loam	L	M	M	L
G	6.4	6.5	46,AmF2,	Caperton-San Andreas-Modesto families complex, Amargosa rocky coarse sandy loam	No Data, L	No Data, M	M	L
G	6.5	6.8	46,	Caperton-San Andreas-Modesto families complex	No Data	No Data	N/A	L
G	6.8	7.2	36,46,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Caperton-San Andreas-Modesto families complex	No Data	No Data	N/A	L
G	7.2	7.4	36,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	No Data	No Data	N/A	L
G	7.4	7.5	36,39,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Tujunga-Capistrano families association	No Data	No Data	N/A	L
G	7.5	7.6	36,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	No Data	No Data	N/A	L
G	7.6	7.8	36,39,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Tujunga-Capistrano families association	No Data	No Data	N/A	L
G	7.8	7.9	39,	Tujunga-Capistrano families association	No Data	No Data	N/A	L
G	7.9	8.1	36,39,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Tujunga-Capistrano families association	No Data	No Data	N/A	L
G	8.1	8.8	39,	Tujunga-Capistrano families association	No Data	No Data	N/A	L
G	8.8	9.0	36,39,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Tujunga-Capistrano families association	No Data	No Data	N/A	L
G	9.0	9.3	36,	Tujunga-Capistrano families association	No Data	No Data	N/A	L
G	9.3	10.4	36,39,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Tujunga-Capistrano families association	No Data	No Data	N/A	L
G	10.4	10.6	39,	Tujunga-Capistrano families association	No Data	No Data	N/A	L
G	10.6	10.8	36,39,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Tujunga-Capistrano families association	No Data	No Data	N/A	L
G	10.8	10.9	36,46,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Caperton-San Andreas-Modesto families complex	No Data	No Data	N/A	L
G	10.9	11.3	46,	Caperton-San Andreas-Modesto families complex	No Data	No Data	N/A	L
G	11.3	11.4	36,46,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Caperton-San Andreas-Modesto families complex	No Data	No Data	N/A	L
G	11.4	12.3	36,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	No Data	No Data	N/A	L
G	12.3	12.4	35,36,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	No Data	No Data	N/A	L
G	12.4	12.5	35,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	No Data	No Data	N/A	L

TABLE A-11 – IMPACT ASSESSMENT TABLE
Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
G	12.5	12.6	26,35,	Stonyford-Millsholm families complex, Trigo granitic substratum-Exchequer families-Rock outcrop complex	No Data	No Data	N/A	L
G	12.6	13.9	26,	Stonyford-Millsholm families complex	No Data	No Data	N/A	L
G	13.9	14.0	26,8,	Stonyford-Millsholm families complex, Lodo-Modesto families complex	No Data	No Data	N/A	L
G	14.0	19.2	8,	Lodo-Modesto families complex	No Data	No Data	N/A	L
G	19.2	19.4	15,8,	Calciserollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex, Lodo-Modesto families complex	No Data	No Data	N/A	L
G	19.4	19.5	15,	Calciserollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data	No Data	N/A	L
G	19.5	19.8	12,15,	Mollic Haploxeralfs, Calciserollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data	No Data	N/A	L
G	19.8	20.9	12,	Mollic Haploxeralfs	No Data	No Data	N/A	L
G	20.9	21.1	12,15,	Mollic Haploxeralfs, Calciserollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data	No Data	N/A	L
G	21.1	21.2	15,	Calciserollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data	No Data	N/A	L
GV	0.0	0.7	AmF2	Amargosa rocky coarse sandy loam	L	M	M	L
GV	0.7	0.9	46, AmF2	Caperton-San Andreas-Modesto families complex, Amargosa rocky coarse sandy loam	No Data, L	No Data, M	M	L
GV	0.9	1.1	46	Caperton-San Andreas-Modesto families complex	No Data	No Data	N//A	L
GV	1.1	1.2	46, 7	Caperton-San Andreas-Modesto families complex; Hanford family	No Data	No Data	N//A	L
GV	1.2	1.8	46	Caperton-San Andreas-Modesto families complex	No Data	No Data	N//A	L
GV	1.8	2.1	35, 46	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Caperton-San Andreas-Modesto families complex	No Data	No Data	N//A	L
GV	2.1	2.2	35, 36, 46	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Tujunga-Capistrano families association; Caperton-San Andreas-Modesto families complex	No Data	No Data	N//A	L
GV	2.2	2.4	36, 46	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Caperton-San Andreas-Modesto families complex	No Data	No Data	N//A	L
GV	2.4	2.5	46	Caperton-San Andreas-Modesto families complex	No Data	No Data	N//A	L
GV	2.5	2.6	36, 46	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Caperton-San Andreas-Modesto families complex	No Data	No Data	N//A	L
GV	2.6	2.7	35, 36, 46	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Tujunga-Capistrano families association Caperton-San Andreas-Modesto families complex	No Data	No Data	N//A	L
GV	2.7	3.0	35	Trigo granitic substratum-Exchequer families-Rock outcrop complex	No Data	No Data	N//A	L
GV	3.0	3.6	35, 36	Trigo granitic substratum-Exchequer families-Rock outcrop complex	No Data	No Data	N//A	L

TABLE A-11 – IMPACT ASSESSMENT TABLE
Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
GV	5.8	6.0	36, 46	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Caperton-San Andreas-Modesto families complex	No Data	No Data	N//A	L
GV	6.0	6.5	46	Caperton-San Andreas-Modesto families complex	No Data	No Data	N//A	L
H1	0.0	0.1	GsC	Greenfield sandy loam	L	L	L	L
H1	0.1	0.4	GsC,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	L, M	L, M	M	L
H1	0.4	0.8	GsC	Greenfield sandy loam	L	L	L	L
H1	0.8	1.1	GsC,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	L, M	L, M	M	L
H1	1.1	1.4	RcB,	Ramona coarse sandy loam	M	M	M	L
H1	1.4	1.6	GsC,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	L, M	L, M	M	L
H1	1.6	1.7	GsC		L	L	L	L
H1	1.7	1.9	GsC,RcC,	Greenfield sandy loam, Ramona coarse sandy loam	L, M	L, M	M	L
H1	1.9	2.0	GsC,RcC,TsF,	Greenfield sandy loam, Ramona coarse sandy loam, Terrace escarpments	L, M, No Data	L, M, No Data	M	L
H1	2.0	2.1	RcC,TsF,	Ramona coarse sandy loam, Terrace escarpments	M, No Data	M, No Data	M	L
H1	2.1	2.3	HbC,RcC,VsF2,	Hanford coarse sandy loam, Ramona coarse sandy loam, Vista coarse sandy loam	L, M, L	L, M, L	M	L
H1	2.3	2.5	VsF2,	Vista coarse sandy loam	L	L	L	L
H1	2.5	2.6	HbC,VsE,VsF2,	Hanford coarse sandy loam, Vista coarse sandy loam	L, L, L	L, L, L	L	L
H1	2.6	2.7	AmF2,HbC,HdC, VsE,	Amargosa rocky coarse sandy loam, Hanford coarse sandy loam, Hanford gravelly sandy loam, Vista coarse sandy loam	L, L, L, L	M, L, L, L	M	L
H2	0.0	0.3	AmF2,HdC,	Amargosa rocky coarse sandy loam, Hanford gravelly sandy loam	L, L	M, L	M	L
H2	0.3	0.4	AmF2,VsE2,	Amargosa rocky coarse sandy loam, Vista coarse sandy loam	L, L	M, L	M	L
H2	0.4	0.5	AmF2,VsE2,VsF,	Amargosa rocky coarse sandy loam, Vista coarse sandy loam	L, L	M, L	M	L
H2	0.5	0.6	VsF,	Vista coarse sandy loam	L	L	L	L
H2	0.6	0.8	HbC,VsF,VsF2,	Hanford coarse sandy loam, Vista coarse sandy loam	L, L, L	L, L, L	L	L
H2	0.8	1.0	GsC,HbC,VsF2,	Greenfield sandy loam, Hanford coarse sandy loam, Vista coarse sandy loam	L, L, L	L, L, L	L	L
H2	1.0	1.1	Co,GsC,HbC,	Chino loam, Greenfield sandy loam, Hanford coarse sandy loam	L, L, L	H, L, L	H	L
H2	1.1	1.2	GaE2,GsC,MhE2,	Gaviota rocky sandy loam, Greenfield sandy loam, Millsholm rocky loam	L, L, L	L, L, L	L	L
H2	1.2	1.3	GaE2,MhE2,	Gaviota rocky sandy loam, Millsholm rocky loam	L, L	L, L	L	L
H2	1.3	1.4	CmF2,MhE2,	Castaic-Balcom silty clay loams, Millsholm rocky loam	L, L	H, L	H	L
H2	1.4	1.5	CmF2,MhE2,RdE 2,YoC,	Castaic-Balcom silty clay loams, Millsholm rocky loam, Ramona sandy loam, Yolo loam	L, L, M, L	H, L, M, L	H	L
H2	1.5	1.6	HbC,RdE2,YoC,	Hanford coarse sandy loam, Ramona sandy loam, Yolo loam	L, M, L	L, M, L	M	L
H2	1.6	1.7	Co,HbC,YoC,	Chino loam, Hanford coarse sandy loam, Yolo loam	L, L, L	H, L, L	H	L
H2	1.7	1.8	Co,GsC,	Chino loam, Greenfield sandy loam	L, L	H, L	H	L

TABLE A-11 – IMPACT ASSESSMENT TABLE
Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
H2	1.8	1.9	AmF2,GsC,	Amargosa rocky coarse sandy loam, Greenfield sandy loam	L, L	M, L	M	L
H2	1.9	2.5	AmF2,	Amargosa rocky coarse sandy loam	L	M	M	L
H2	2.5	2.6	35,AmF2,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Amargosa rocky coarse sandy loam	No Data, L	No Data, M	M	L
H2	2.6	3.7	35,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	No Data	No Data	N/A	L
H2	3.7	3.8	35,36,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	No Data	No Data	N/A	L
H2	3.8	4.5	36,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	No Data	No Data	N/A	L
H2	4.5	4.7	35,36,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	No Data	No Data	N/A	L
H2	4.7	5.1	35,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	No Data	No Data	N/A	L
H2	5.1	5.2	35,37,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Lodo-Tujunga families association	No Data	No Data	N/A	L
H2	5.2	5.3	37,	Lodo-Tujunga families complex	No Data	No Data	N/A	L
H2	5.3	5.4	37,8,	Lodo-Tujunga families complex, Lodo-Modesto families complex	No Data	No Data	N/A	L
H2	5.4	12.8	8,	Lodo-Modesto families complex	No Data	No Data	N/A	L
H2	12.8	12.9	1,8,	Exchequer family, Lodo-Modesto families complex	No Data	No Data	N/A	L
H2	12.9	14.4	1,	Exchequer family	No Data	No Data	N/A	L
H2	14.4	14.5	1,8,	Exchequer family, Lodo-Modesto families complex	No Data	No Data	N/A	L
H2	14.5	15.2	8,	Lodo-Modesto families complex	No Data	No Data	N/A	L
H2	15.2	15.5	15,8,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex, Lodo-Modesto families complex	No Data	No Data	N/A	L
H2	15.5	15.6	15,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data	No Data	N/A	L
H2	15.6	15.8	15,7,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex, Hanford family	No Data	No Data	N/A	L
H2	15.8	16.1	15,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data	No Data	N/A	L
H2	16.1	16.3	15,7,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex, Hanford family	No Data	No Data	N/A	L
H2	16.3	16.6	15,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data	No Data	N/A	L
H2	16.6	16.8	15,7,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex, Hanford family	No Data	No Data	N/A	L
H2	16.8	17.1	15,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data	No Data	N/A	L
I	0.0	1.4	GsC	Greenfield sandy loam	L	L	L	L
I	1.4	1.8	GsC,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	L, L	L, L	L	L
I	1.8	1.9	GsC	Greenfield sandy loam	L	L	L	L
I	1.9	2.0	GsC,HbC,HcC,	Greenfield sandy loam, Hanford coarse sandy loam, Hanford sandy loam	L, L, L	L, L, L	L	L
I	2.0	2.3	HbC,	Hanford coarse sandy loam	L	L	L	L
I	2.3	2.4	GsC,HbC,	Greenfield sandy loam	L	L	L	L

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TABLE A-11 – IMPACT ASSESSMENT TABLE
Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
I	2.4	2.5	GsC	Greenfield sandy loam	L	L	L	L
I	2.5	2.6	GsC,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	L, L	L, L	L	L
I	2.6	2.8	HbC,	Hanford coarse sandy loam	L	L	L	L
I	2.8	3.1	GsC2,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	L, L	L, L	L	L
I	3.1	3.3	HbC,	Hanford coarse sandy loam	L	L	L	L
I	3.3	3.5	HbC,HbD,	Hanford coarse sandy loam, Handford coarse sandy loam	L, L	L, L	L	L
I	3.5	3.6	GsC,HbC,HbD,	Greenfield sandy loam, Hanford coarse sandy loam, Handford coarse sandy loam	L, L, L	L, L, L	L	L
I	3.6	3.7	GsC,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	L, L	L, L	L	L
I	3.7	3.8	HbC,HbD,	Hanford coarse sandy loam, Handford coarse sandy loam	L, L	L, L	L	L
I	3.8	4.2	HbD,	Hanford coarse sandy loam	L	L	L	L
I	4.2	4.4	GsC,HbD,	Greenfield sandy loam, Hanford coarse sandy loam	L, L	L, L	L	L
I	4.4	4.6	HbD,TsF,	Hanford coarse sandy loam, Terrace escarpments	L, No Data	L, No Data	L	L
I	4.6	4.8	HbD,TsF,VsF2,	Hanford coarse sandy loam, Terrace escarpments, Vista coarse sandy loam	L, No Data, L	L, No Data, L	L	L
I	4.8	4.9	HbD,VsF2,	Hanford coarse sandy loam, Vista coarse sandy loam	L, L	L, L	L	L
I	4.9	5.6	VsF2,	Vista coarse sandy loam	L	L	L	L
I	5.6	5.8	VsF,VsF2,	Vista coarse sandy loam	L, L	L, L	L	L
I	5.8	6.6	VsF,	Vista coarse sandy loam	L	L	L	L
I	6.6	6.7	HcC,VsF,	Hanford sandy loam, Vista coarse sandy loam	L, L	L, L	L	L
I	6.7	6.8	AmF2,HcC,VsF,	Amargosa rocky coarse sandy loam, Hanford sandy loam, Vista coarse sandy loam	L, L, L	M, L, L	M	L
I	6.8	7.0	AmF2,	Amargosa rocky coarse sandy loam	L	M	M	L
I	7.0	7.2	AmF2,GdF,	Amargosa rocky coarse sandy loam, Godde rocky loam	L, M	M, M	M	L
I	7.2	7.5	GdF,	Godde rocky loam	M	M	M	L
I	7.5	8.0	GdF,HbC,	Godde rocky loam, Hanford coarse sandy loam	M, L	M, L	M	L
I	8.0	8.3	GcE,HbC,	Godde loam, Hanford coarse sandy loam	M, L	M, L	M	L
I	8.3	8.7	GcE,	Godde loam	M	M	M	L
I	8.7	8.8	GcE,GdF,	Godde loam, Godde rocky loam	M, M	M, M	M	L
I	8.8	8.9	GcE,GdF,WgD,	Godde loam, Godde rocky loam, Wyman gravelly loam	M, M, L	M, M, L	M	L
I	8.9	9.2	GcE,WgD,	Godde loam, Wyman gravelly loam	M, L	M, L	M	L
I	9.2	9.9	GcE,HbC,	Godde loam, Hanford coarse sandy loam	M, L	M, L	M	L
I	9.9	10.1	GcE,HbC,HcC,	Godde loam, Hanford coarse sandy loam, Hanford sandy loam	M, L, L	M, L, L	M	L
I	10.1	10.3	HbC,HcC,	Hanford coarse sandy loam, Hanford sandy loam	L, L	L, L	L	L
I	10.3	10.5	GcE,HbC,	Godde loam, Hanford coarse sandy loam	M, L	M, L	M	L
I	10.5	10.6	ApF,GcE,HbC,	Anaverde rocky loam, Godde loam, Hanford coarse sandy loam	L, M, L	M, M, L	M	L
I	10.6	10.7	ApF,	Anaverde rocky loam	L	M	M	L
I	10.7	10.8	ApF,GdF,	Anaverde rocky loam, Godde rocky loam	L, M	M, M	M	L
I	10.8	12.1	ApF,	Anaverde rocky loam	L	M	M	L
I	12.1	12.5	ApF,GdF,	Anaverde rocky loam, Godde rocky loam	L, M	M, M	M	L
I	12.5	12.6	ApF,	Anaverde rocky loam	L	M	M	L

TABLE A-11 – IMPACT ASSESSMENT TABLE
Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
I	12.6	12.7	ApF,GdF,	Anaverde rocky loam, Godde rocky loam	L, M	M, M	M	L
I	12.7	13.7	GdF,	Godde rocky loam	M	M	M	L
I	13.7	13.8	AnE,ApF,GdF,	Anaverde loam, Anaverde rocky loam, Godde rocky loam	L, L, M	M, M, M	M	L
I	13.8	13.9	AnE,GdF,	Anaverde loam, Godde rocky loam	L, M	M, M	M	L
I	13.9	14.7	GdF,	Godde rocky loam	M	M	M	L
I	14.7	15.1	CzC,GdF,	Cortina cobbly sandy loam, Godde rocky loam	M, M	M, M	M	L
I	15.1	15.5	GdF,	Godde rocky loam	M	M	M	L
I	15.5	15.6	GdF,WoC,	Godde rocky loam, Wyman cobbly loam	M, L	M, L	M	L
I	15.6	15.7	GdF,	Godde rocky loam	M	M	M	L
I	15.7	15.9	GdF,WoC,	Godde rocky loam, Wyman cobbly loam	M, L	M, L	M	L
I	15.9	16.0	GdF,TsF,WgC,WoC,	Godde rocky loam, Terrace escarpments, Wyman gravelly loam, Wyman cobbly loam	M, No Data, L, L	M, No Data, L, L	M	L
I	16.0	16.1	GdF,WgD,WoC,	Godde rocky loam,Wyman gravelly loam, Wyman cobbly loam	M, L, L	M, L, L	M	L
I	16.1	16.3	GdF,WgD,	Godde rocky loam,Wyman gravelly loam	M, L	M, L	M	L
I	16.3	16.5	GdF,	Godde rocky loam	M	M	M	L
I	16.5	16.6	8,GdF,	Lodo-modesto families complex, Godde rocky loam	No Data, M	No Data, M	M	L
I	16.6	16.7	1,8,GdF,	Exchequer family, Lodo-modesto families complex, Godde rocky loam	No Data, No Data, M	No Data, No Data, M	M	L
I	16.7	16.9	1,8,	Exchequer family, Lodo-modesto families complex	No Data	No Data	N/A	L
I	16.9	17.0	1,6,8,	Exchequer family, Typic haploxeralfs, Lodo-modesto families complex	No Data	No Data	N/A	L
I	17.0	17.1	1,6,	Exchequer family, Typic haploxeralfs	No Data	No Data	N/A	L
I	17.1	17.6	1,	Exchequer family	No Data	No Data	N/A	L
I	17.6	18.0	1,6,	Exchequer family, Typic haploxeralfs	No Data	No Data	N/A	L
I	18.0	18.1	1,6,8,	Exchequer family, Typic haploxeralfs, Lodo-modesto families complex	No Data	No Data	N/A	L
I	18.1	18.2	6,8,WgC,	Typic haploxeralfs, Lodo-modesto families complex, Wyman gravelly loam	No Data, No Data, L	No Data, No Data, L	L	L
I	18.2	18.3	6,AmF2,WgC,	Typic haploxeralfs, Amargosa rocky coarse sandy loam, Wyman gravelly loam	No Data, L, L	No Data, M, L	M	L
I	18.3	18.4	AmF2,TsF,WgC,	Amargosa rocky coarse sandy loam, Terrace escarpments, Wyman gravelly loam	L, No Data, L	M, No Data, L	M	L
I	18.4	18.5	AmF2,TsF,VsE,	Amargosa rocky coarse sandy loam, Terrace escarpments, Vista coarse sandy loam	L, No Data, L	M, No Data, L	M	L
I	18.5	18.0	AmF2,VsE,	Amargosa rocky coarse sandy loam, Vista coarse sandy loam	L, L	M, L	M	L
I	18.7	19.2	AmF2,	Amargosa rocky coarse sandy loam	L	M	M	L
I	19.2	19.5	AmF2,GsC,	Amargosa rocky coarse sandy loam, Greenfield sandy loam	L, L	M, L	M	L
I	19.5	23.0	AmF2,	Amargosa rocky coarse sandy loam	L	M	M	L
I	23.0	23.1	AmF2,HcA,	Amargosa rocky coarse sandy loam, Hanford sandy loam	L, L	M, L	M	L
I	23.1	23.2	1,AmF2,HcA,	Exchequer family, Amargosa rocky coarse sandy loam, Hanford sandy loam	No Data, L, L	No Data, M, L	M	L
I	23.2	23.3	1,7,AmF2,HcA,	Exchequer family, Hanford family, Amargosa rocky coarse sandy loam, Hanford sandy loam	No Data, No Data, L, L	No Data, No Data, M, L	M	L
I	23.3	23.8	1,	Exchequer family	No Data	No Data	N/A	L

TABLE A-11 – IMPACT ASSESSMENT TABLE
Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
I	23.8	24.3	1,AmF2,	Exchequer family, Amargosa rocky coarse sandy loam	No Data, L	No Data, M	M	L
I	24.3	24.4	1,AmF2,CmF2,	Exchequer family, Amargosa rocky coarse sandy loam, Castaic-Balcom silty clay loams	No Data, L, L	No Data, M, H	H	L
I	24.4	24.5	1,15,AmF2,CmF2,	Exchequer family, Calcixerollic xerochrepts-Calleguas family-Modesto family, moderately deep complex, Amargosa rocky coarse sandy loam, Castaic-Balcom silty clay loams	No Data, No Data, L, L	No Data, No Data, M, H	H	L
I	24.5	24.6	15,CmF2,	Calcixerollic xerochrepts-Calleguas family-Modesto family, moderately deep complex, Castaic-Balcom silty clay loams	No Data, L	No Data, H	H	L
I	24.6	25.5	CmF2,	Castaic-Balcom silty clay loams	L	H	H	L
I	25.5	26.4	CmF2,HcC,	Castaic-Balcom silty clay loams, Hanford sandy loam	L, L	H, L	H	L
I	26.4	27.0	CmF2,	Castaic-Balcom silty clay loams	L	H	H	L
I	27.0	27.3	CmF2,CnG3,	Castaic-Balcom silty clay loams, Castaic and Saugus soils	L, L	H, H	H	L
I	27.3	27.6	CmF2,CzC,	Castaic-Balcom silty clay loams, Cortina cobbly sandy loam	L, M	H, M	H	L
I	27.6	27.7	CzC,	Cortina cobbly sandy loam	M	M	M	L
I	27.7	27.8	CmF2,CzC,	Castaic-Balcom silty clay loams, Cortina cobbly sandy loam	L, M	H, M	H	L
I	27.8	27.9	CmF2,CyC,CzC,	Castaic-Balcom silty clay loams, Cortina sandy loam, Cortina cobbly sandy loam	L, M, M	H, M, M	H	L
I	27.9	28.0	CyC,CzC,	Cortina sandy loam, Cortina cobbly sandy loam	M, M	M, M	M	L
I	28.0	28.3	CyC,HcC,	Cortina sandy loam, Hanford sandy loam	M, L	M, L	M	L
I	28.3	28.4	CyC,HcC,MfA,	Cortina sandy loam, Hanford sandy loam, Metz loamy sand	M, L, L	M, L, H	H	L
I	28.4	28.5	HcC,MfA,MpC,	Hanford sandy loam, Metz loamy sand, Mocho loam	L, L, L	L, H, H	H	L
I	28.5	28.6	MfA,MpC,OgF,	Metz loamy sand, Mocho loam, Ojai loam	L, L, L	H, H, M	H	L
I	28.6	28.7	OgF,ZaC,	Ojai loam, Zamora loam	L, L	H, H	H	L
I	28.7	28.8	MpC,OgF,ZaC,	Mocho loam, Ojai loam, Zamora loam	L, L, L	H, H, H	H	L
I	28.8	28.9	CmF2,MpC,OgF,	Castaic-Balcom silty clay loams, Mocho loam, Ojai loam	L, L, L	H, H, H	H	L
I	28.9	29.0	CmF2,	Castaic-Balcom silty clay loams	L	H	H	L
I	29.0	29.3	CmF2,MpC,	Castaic-Balcom silty clay loams, Mocho loam	L, L	H, H	H	L
I	29.3	29.4	CmF2,MpC,ScF2,	Castaic-Balcom silty clay loams, Mocho loam, Saugus loam	L, L, L	H, H. L	H	L
I	29.4	29.5	MpC,ScF2,	Mocho loam, Saugus loam	L, L	H, L	H	L
I	29.5	30.4	ScF2,	Saugus loam	L	L	L	L
I	30.4	30.5	ScF2,YoC,	Saugus loam, Yolo loam	L, L	L, L	L	L
I	30.5	30.7	ScF2,	Saugus loam	L	L	L	L
I	30.7	30.8	CyC,ScF2,YoC,	Cortina sandy loam, Saugus loam, Yolo loam	M, L, L	M, L, L	M	L
I	30.8	30.9	CyC,HcC,ScF2,YoC,	Cortina sandy loam, Hanford sandy loam, Saugus loam, Yolo loam	M, L, L, L	M, L, L, L	M	L
I	30.9	31.0	HcC,ScF2,SsB,YoC,	Hanford sandy loam, Saugus loam, Sorrento loam, Yolo loam	L, L, L, L	L, L, H, L	H	L
I	31.0	31.1	CmF2,HcC,ScF2,SsB,	Castaic-Balcom silty clay loams, Hanford sandy loam, Saugus loam, Sorrento loam	L, L, L, L	H, L, L, H	H	L
I	31.1	31.3	HcC,ScF2,SsB,	Hanford sandy loam, Saugus loam, Sorrento loam	L, L, H	L, L, H	H	L

TABLE A-11 – IMPACT ASSESSMENT TABLE
Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
I	31.3	31.4	15,7,HcC,ScF2,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex, Hanford family, Hanford sandy loam, Saugus loam	No Data, No Data, L, L	No Data, No Data, L, L	L	L
I	31.4	31.5	15,19,7,HcC,ScF2,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex, Trigo family-Calcixerollic Xerochrepts-Vista family complex, Hanford family, Hanford sandy loam, Saugus loam	No Data, No Data, No Data, L, L	No Data, No Data, No Data, L, L	L	L
I	31.5	31.6	15,19,7,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex, Trigo family-Calcixerollic Xerochrepts-Vista family complex, Hanford family	No Data	No Data	N/A	L
I	31.6	31.9	15,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data	No Data	N/A	L
J	0.0	0.1	15	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data	No Data	N/A	L
J	0.1	0.3	12,15	Mollic Haploxeralfs, Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data	No Data	N/A	L
J	0.3	0.8	12	Mollic Haploxeralfs	No Data	No Data	N/A	L
J	0.8	0.9	12,15	Mollic Haploxeralfs, Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data	No Data	N/A	L
J	0.9	1.6	15	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data	No Data	N/A	L
J	1.6	1.7	15,CmF2	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data, L	No Data, H	H	L
J	1.7	1.8	CmF2,HcC,ScE,ZaC	Castaic-Balcom silty clay loams, Hanford sandy loam, Saugus loam, Zamora loam	L, L, L, L	H, L, L, H	H	L
J	1.8	1.9	MfC,ScE,ScF2,ZaC	Metz loamy sand, Saugus loam, Zamora loam	L, L, L, L	H, L, L, H	H	L
J	1.9	2.0	MfC,Sa	Metz loamy sand, Sandy alluvial land	L, L	H, H	H	L
J	2.0	2.1	HcC,Sa,ScF2	Hanford sandy loam, Sandy Alluvial land, Saugus loam	L, L, L	L, H, L	H	L
J	2.1	2.2	ScF2	Saugus loam	L	L	L	L
J	2.2	2.4	CnG3,ScF2	Castaic and Saugus soils, Saugus loam	L, L	H, L	H	L
J	2.4	2.6	CmF,CnG3,ScF2	Castaic-Balcom silty clay loams, Castaic and Saugus soils, Saugus loam	L, L, L	H, H, L	H	L
J	2.6	2.7	CmF,ScE,ScF2	Castaic-Balcom silty clay loams, Saugus loam	L, L, L	H, L, L	H	L
J	2.7	2.8	ScE,ScF2	Saugus loam	L, L	L, L	L	L
J	2.8	2.9	ScE	Saugus loam	L	L	L	L
J	2.9	3.0	12,CnG3,ScE	Mollic Haploxeralfs, Castaic and Saugus soils, Saugus loam	No Data, L, L	No Data, H, L	H	L
J	3.0	3.1	12,ScE	Mollic Haploxeralfs, Saugus loam	No Data, L	No Data L	L	L
J	3.1	3.2	12	Mollic Haploxeralfs	No Data	No Data	N/A	L
J	3.2	3.4	12,26	Mollic Haploxeralfs, Stonyford-Millsholm families complex	No Data	No Data	N/A	L
J	3.4	3.6	26,7	Stonyford-Millsholm families complex, Hanford family	No Data	No Data	N/A	L
J	3.6	4.3	26	Stonyford-Millsholm families complex	No Data	No Data	N/A	L
J	4.3	4.5	26,7	Stonyford-Millsholm families complex, Hanford family	No Data	No Data	N/A	L
J	4.5	4.9	26	Stonyford-Millsholm families complex	No Data	No Data	N/A	L
J	4.9	5.0	26,CmF2	Stonyford-Millsholm families complex, Castaic-Balcom silty caly loams	No Data, L	No Data, H	H	L

TABLE A-11 – IMPACT ASSESSMENT TABLE
Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
J	5.0	5.1	26,CmF2,MhE2	Stonyford-Millsholm families complex, Castaic-Balcom silty caly loams, Millsholm rocky loam	No Data, L, L	No Data, H, L	H	L
J	5.1	5.2	MhE2	Millsholm rocky loam	L	L	L	L
J	5.2	5.4	CmF,MhE2	Castaic-Balcom silty clay loams, Millsholm rocky loam	L, L	H, L	H	L
J	5.4	5.7	CmF	Castaic-Balcom silty clay loams	L	H	H	L
J	5.7	5.8	CmF,DA	Castaic-Balcom silty clay loams, Dams	L, No Data	L, No Data	L	L
J	5.8	5.9	CmF,DA,Rg	Castaic-Balcom silty clay loams, Dams, Riverwash	L, No Data, No Data	L, No Data, No Data	L	L
J	5.9	6.0	CyA,DA,HcA,Rg	Cortina sandy loam, dams, Hanford sandy loam, Riverwash	M, No Data, L, No Data	M, No Data, L, No Data	M	L
J	6.0	6.1	CyA,DA,HcA,HcC	Cortina sandy loam, dams, Hanford sandy loam	M, No Data, L, L	M, No Data, L, L	M	L
J	6.1	6.2	CmF,DA,HcA,HcC	Castaic-Balcom silty clay loams, Dams, Hanford sandy loam	L, No Data, L, L	H, No Data, L, L	H	L
J	6.2	6.3	CmF,DA,HcC	Castaic-Balcom silty clay loams, Dams, Hanford sandy loam	L, No Data, L	H, No Data, L	H	L
J	6.3	6.5	CmF	Castaic-Balcom silty clay loams	L	H	H	L
J	6.5	6.8	CmE,CmF	Castaic-Balcom silty clay loams	L, L	H, H	H	L
J	6.8	7.6	CmF	Castaic-Balcom silty clay loams	L	H	H	L
J	7.6	8.1	CmE,CmF	Castaic-Balcom silty clay loams	L, L	H, H	H	L
J	8.1	10.0	CmF	Castaic-Balcom silty clay loams	L	H	H	L
J	10.0	10.3	CmF,MhF2	Castaic-Balcom silty clay loams, Millsholm rocky loam	L, L	H, L	H	L
J	10.3	10.6	MhF2	Millsholm rocky loam	L	L	L	L
J	10.6	10.8	CnG3,MhF2	Castaic and Saugus soils, Millsholm rocky loam	L, L	H, L	H	L
J	10.8	10.9	MhF2	Millsholm rocky loam	L	L	L	L
J	10.9	11.5	CnG3,MhF2	Castaic and Saugus soils, Millsholm rocky loam	L, L	H, L	H	L
J	11.5	11.7	MhF2	Millsholm rocky loam	L	L	L	L
J	11.7	11.9	CnG3,MhF2	Castaic and Saugus soils, Millsholm rocky loam	L, L	H, L	H	L
J	11.9	12.0	CyA,MhF2,YoC	Cortina sandy loam, Millsholm rocky loam, Yolo loam	M, L, L	M, L, L	M	L
K	0.0	0.3	15	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data	No Data	N/A	L
K	0.3	0.4	15,7	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex, Hanford family	No Data	No Data	N/A	L
K	0.4	0.5	15,7,HcC,ScF2	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex, Hanford family, Hanford sandy loam, Saugus loam	No Data, No Data, L, L	No Data, No Data, L, L	L	L
K	0.5	0.7	HcC,ScF2,SsB	Hanford sandy loam, Saugus loam, Sorrento loam	L, L, L	L, L, H	H	L
K	0.7	0.8	ScF2,SsB	Saugus loam, Sorrento loam	L, L	L, H	H	L
K	0.8	0.9	HcC,ScF2,SsB	Hanford sandy loam, Saugus loam, Sorrento loam	L, L, L	L, L, H	H	L
K	0.9	1.0	HcC,ScF2,YoC	Hanford sandy loam, Saugus loam, Yolo loam	L, L, L	L, L, L	L	L
K	1.0	1.1	ScF2,YoC	Saugus loam, Yolo loam	L, L	L, L	L	L
K	1.1	1.2	ScF2	Saugus loam	L	L	L	L
K	1.2	1.4	ScF2,YoC	Saugus loam, Yolo loam	L, L	L, L	L	L

TABLE A-11 – IMPACT ASSESSMENT TABLE
Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
K	1.4	1.5	HcC,ScF2,YoC	Hanford sandy loam, Saugus loam, Yolo loam	L, L, L	L, L, L	L	L
K	1.5	1.6	HcC,ScF2	Hanford sandy loam, Saugus loam	L, L	L, L	L	L
K	1.6	2.1	HcC,ScF2,YoC	Hanford sandy loam, Saugus loam, Yolo loam	L, L, L	L, L, L	L	L
K	2.1	2.2	ScF2,YoC	Saugus loam, Yolo loam	L, L	L, L	L	L
K	2.2	2.3	HcC,ScF2,YoC	Hanford sandy loam, Saugus loam, Yolo loam	L, L, L	L, L, L	L	L
K	2.3	2.4	HcC,ScF2	Hanford sandy loam, Saugus loam	L, L	L, L	L	L
K	2.4	2.5	MfC,OgC,ScF2	Metz loam sand, Oak Glen loam, Saugus loam	L, L, L	H, M, L	H	L
K	2.5	2.6	OgC,ScF2	Oak Glem loam, Saugus loam	M, L	M, L	M	L
K	2.6	2.7	OgC,OgE	Oak Glen loam, Ojai loam	L, L	M, M	M	L
K	2.7	2.8	CyA,OgC,OgE	Cortina sandy loam, Oak Glen loam, Ojai loam	M, L, L	M, M, M	M	L
K	2.8	2.9	CyA,OgE	Cortina sandy loam, Ojai loam	M, L	M, M	M	L
K	2.9	3.0	CyA,HcA	Cortina sandy loam, Hanford sandy loam	M, L	M, L	M	L
K	3.0	3.1	CyA,HcA,MfC	Cortina sandy loam, Hanford sandy loam, Metz loamy sand	M, L, L	M, L, H	H	L
K	3.1	3.4	MfC,ScF2	Metz loamy sand, Saugus loam	L, L	L, H	H	L
K	3.4	3.7	OgC,ScF2	Oak Glen loam, Saugus loam	L, L	M, L	M	L
K	3.7	3.8	ScF2	Saugus loam	L	L	L	L
K	3.8	4.1	MfC,ScF2	Metz loamy sand, Saugus loam	L, L	L, H	H	L
K	4.1	4.2	MfC,OgE,ScF2	Metz loamy sand, Ojai loam, Saugus loam	L, L, L	L, M, H	H	L
K	4.2	4.3	OgE,ScF2	Ojai loam, Saugus loam	L, L	M, H	H	L
K	4.3	4.4	OgE,Rg,Sa	Ojai loam, Riverwash, Sandy alluvial land	L, No Data, L	M, No Data, H	H	L
K	4.4	4.5	MfA,Rg,Sa	Metz loamy sand, Riverwash, Sandy alluvial land	L, No Data, L	H, No Data, H	H	L
K	4.5	4.6	MfA	Metz loamy sand	L	H	H	L
K	4.6	4.7	CyA,HcA,MfA	Cortina sandy loam, Hanford sandy loam, Metz loamy sand	M, L, L	M, L, H	H	L
K	4.7	4.8	CyA,HcA	Cortina sandy loam, Hanford sandy loam	M, L	M, L	M	L
K	4.8	4.9	HcA,YoC	Hanford sandy loam, Yolo loam	L, L	L, L	L	L
K	4.9	5.0	HcA,ScF2,YoC	Hanford sandy loam, Saugus loam, Yolo loam	L, L, L	L, L, L	L	L
K	5.0	5.1	ScF2,YoC	Saugus loam, Yolo loam	L, L	L, L	L	L
K	5.1	5.2	YoC	Yolo loam	L	L	L	L
K	5.2	6.0	ScF2,YoC	Saugus loam, Yolo loam	L, L	L, L	L	L
K	6.0	6.1	ScF2	Saugus loam	L	L	L	L
K	6.1	6.2	OgF,ScF2	Ojai loam, Saugus loam	L, L	M, L	M	L
K	6.2	6.4	OgE,OgF,ScF2	Ojai loam, Saugus loam	L, L, L	M, M, L	M	L
K	6.4	6.5	OgC,OgE,OgF	Ojai loam	L, L, L	M, M, M	M	L
K	6.5	6.7	OgC,OgF	Ojai loam	L, L	M, M	M	L
K	6.7	6.8	OgF	Ojai loam	L	M	M	L
K	6.8	6.9	CzC,OgF,ScF2	Cortina cobbly sandy loam, Ojai loam, Saugus loam	M, L, L	M, M, L	M	L
K	6.9	7.0	OgE,OgF,ScF2	Ojai loam, Saugus loam	L, L, L	M, M, L	M	L
K	7.0	7.1	OgE,ScF2	Ojai loam, Saugus loam	L, L	M, L	M	L
K	7.1	7.3	OgC,ScF2	Ojai loam, Saugus loam	L, L	M, L	M	L
K	7.3	7.4	ScF2	Saugus loam	L	L	L	L
K	7.4	7.5	HcA,ScF2	Hanford sandy loam, Saugus loam	L, L	L, L	L	L
K	7.5	7.6	HcA	Hanford sandy loam	L	L	L	L
K	7.6	7.9	HcA,OgF	Hanford sandy loam, Ojai loam	L, L	L, M	M	L
K	7.9	8.4	OgF	Ojai loam	L	M	M	L
K	8.4	8.5	OgF,YoC	Ojai loam, Yolo loam	L, L	M, L	M	L

TABLE A-11 – IMPACT ASSESSMENT TABLE
Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
K	8.5	8.6	OgF,ScE,ScF,YoC	Ojai loam, Saugus loam, Yolo loam	L, L, L, L	M, L, L, L	M	L
K	8.6	8.7	ScE,ScF,YoC	Saugus loam, Yolo loam	L, L, L	L, L, L	L	L
K	8.7	8.9	ScE,ScF	Saugus loam	L, L	L, L	L	L
K	8.9	9.2	ScF	Saugus loam	L	L	L	L
K	9.2	9.4	MhF2,ScF	Millsholm rocky loam, Saugus loam	L, L	L, L	L	L
K	9.4	10.0	MhF2	Millsholm rocky loam	L	L	L	L
K	10.0	10.1	122,MhF2	Millsholm loam, Millsholm rocky loam	M, L	L, L	M	L
K	10.1	10.2	122,125,128	Millsholm holm, Rock outcrop-Friant complex, Saugus loam	No Data	No Data	N/A	L
K	10.2	10.3	125,128	Rock outcrop-Friant complex, Saugus loam	No Data	No Data	N/A	L
K	10.3	10.4	125,128,137	Rock outcrop-Friant complex, Saugus loam, Vista coarse sandy loam	No Data	No Data	N/A	L
K	10.4	11.0	137	Vista coarse sandy loam	No Data	No Data	N/A	L
K	11.0	11.1	108,137	Capistrano-Urban land complex, Vista coarse sandy loam	No Data	No Data	N/A	L
K	11.1	11.2	108,129,137	Capistrano-Urban land complex, Saugus loam, Vista coarse sandy loam	No Data	No Data	N/A	L
K	11.2	11.3	108,128,129	Capistrano-Urban land complex, Saugus loam	No Data	No Data	N/A	L
K	11.3	11.4	108,128	Capistrano-Urban land complex, Saugus loam	No Data	No Data	N/A	L
K	11.4	11.6	104,108,129	Balcom silty clay loam, Capistrano-Urban land complex, Saugus loam	No Data	No Data	N/A	L
K	11.6	11.7	104,128,129	Balcom silty clay loam, Saugus loam	No Data	No Data	N/A	L
K	11.7	11.8	128,129,143	Saugus loam, Xerorthents-Urban land-Saugus complex	No Data	No Data	N/A	L
K	11.8	11.9	128,143	Saugus loam, Xerorthents-Urban land-Saugus complex	No Data	No Data	N/A	L
K	11.9	12.0	108,109,110,128,143		No Data	No Data	N/A	L
K	12.0	12.1	104,108,109,110		No Data	No Data	N/A	L
K	12.1	12.2	104,109,110	Balcom silty clay loam, Chualar-Urban land complex, Conejo-Urban land complex	No Data	No Data	N/A	L
K	12.2	12.4	104	Balcom silty clay loam	No Data	No Data	N/A	L
K	12.4	12.5	104,109,110,132	Balcom silty clay loam, Chualar-Urban land complex, Conejo-Urban land complex, Soper gravelly sandy loam	No Data	No Data	N/A	L
K	12.5	12.7	109,110	Chualar-Urban land complex, Conejo-Urban land complex	No Data	No Data	N/A	L
K	12.7	12.8	104,109,110	Balcom silty clay loam, Chualar-Urban land complex, Conejo-Urban land complex	No Data	No Data	N/A	L
K	12.8	13.4	104	Balcom silty clay loam	No Data	No Data	N/A	L
K	13.4	13.5	104,109,110,123	Balcom silty clay loam, Chualar-Urban land complex, Conejo-Urban land complex, Mocho-Urban land complex	No Data	No Data	N/A	L
K	13.5	13.6	109,110,123	Chualar-Urban land complex, Conejo-Urban land complex, Mocho-Urban land complex	No Data	No Data	N/A	L
K	13.6	13.7	109,110	Chualar-Urban land complex, Conejo-Urban land complex	No Data	No Data	N/A	L
K	13.7	13.8	111,129	Conejo-Urban land complex, Saugus loam	No Data	No Data	N/A	L
K	13.8	14.0	111,129,132	Conejo-Urban land complex, Saugus loam, Soper gravelly sandy loam	No Data	No Data	N/A	L
K	14.0	14.1	111,129	Conejo-Urban land complex, Saugus loam	No Data	No Data	N/A	L
K	14.1	14.2	104129	Balcom silty clay loam, Saugus loam	No Data	No Data	N/A	L

TABLE A-11 – IMPACT ASSESSMENT TABLE
Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
K	14.2	14.3	104118,129	Balcom silty clay loam, Gazos silty clay loam, Saugus loam	No Data	No Data	N/A	L
K	14.3	14.4	104,113,118,129	Balcom silty clay loam, Cropley-Urban land complex, Gazos silty clay loam, Saugus loam	No Data	No Data	N/A	L
K	14.4	14.6	113,118	Cropley-Urban land complex, Gazos silty clay loam	No Data	No Data	N/A	L
K	14.6	14.9	118	Gazos silty clay loam	No Data	No Data	N/A	L
K	14.9	15.0	118,138	Gazos silty clay loam, Xerorthents	No Data	No Data	N/A	L
K	15.0	15.1	104,118,138	Balcom silty clay loam, Gazos silty clay loam, Xerorthents	No Data	No Data	N/A	L
K	15.1	15.2	104,118,133,138	Balcom silty clay loam, Gazos silty clay loam, Soper gravelly sandy loam, Xerorthents	No Data	No Data	N/A	L
K	15.2	15.3	118,133	Gazos silty clay loam, Soper gravelly sandy loam	No Data	No Data	N/A	L
K	15.3	15.4	104,113,118,133	Balcom silty clay loam, Cropley-Urban land complex, Gazos silty clay loam, Soper gravelly sandy loam	No Data	No Data	N/A	L
K	15.4	15.4	104,113	Balcom silty clay loam, Cropley-Urban land complex	No Data	No Data	N/A	L

Notes:
L – Low
M – Moderate
H – High
No – No impact
N/A – Not Applicable

TABLE A-12 – IMPACT ASSESSMENT TABLE
Geologic Feature: Groundwater

Location			Feature	Impact	
Segment Corridor	Mile From	Mile To	Approximate Groundwater Depth	Initial	Residual
A	0.0	13.2	No Data	N/A	N/A
B	0.0	3.4	No Data	N/A	N/A
B	3.4	5.5	250' - well	L	L
B	5.5	5.6	295' - well	L	L
B	5.6	12.1	No Data	N/A	N/A
B	12.1	12.2	172' - well	L	L
B	12.2	17.1	No Data	N/A	N/A
B	17.1	17.2	218' - well	L	L
B	17.2	22.0	No Data	N/A	N/A
B	22.0	22.1	236' - well	L	L
B	22.1	25.8	No Data	N/A	N/A
B	25.8	25.9	206' - well	L	L
B	25.9	26.5	No Data	N/A	N/A
C	0.0	4.4	No Data	N/A	N/A
C	4.4	4.5	138' - Well	L	L
C	4.5	21.7	No Data	N/A	N/A
D	0.0	11.2	No Data available	N/A	N/A
D	11.2	11.3	226' - well	L	L
D	11.3	12.4	No Data available	N/A	N/A
D	12.4	12.5	336' - well	L	L
D	12.5	14.6	No Data available	N/A	N/A
D	14.6	14.7	203' - well	N/A	N/A
D	14.7	34.8	No Data available	N/A	N/A
D	34.8	35.0	10'	H	L
D	35.0	48.2	No Data available	N/A	N/A
E	0.0	2.1	No Data	N/A	N/A
E	2.1	2.2	224' - well	L	L
E	2.2	4.5	No Data	N/A	N/A
E	4.5	4.6	204' - well	L	L
E	4.6	11.3	No Data	N/A	N/A
F	0.0	1.1	No Data	N/A	N/A
F	1.1	1.2	113' - well	L	L
F	1.2	2.9	No Data	N/A	N/A
F	2.9	3.2	<10	H	L
F	3.2	3.4	No Data	N/A	N/A
F	3.4	3.5	233' - well	L	L
F	3.5	3.6	No Data	N/A	N/A
115	0.0	1.1	No Data available	N/A	N/A
115	1.1	1.2	167' - well	L	L
115	1.2	4.8	No Data available	N/A	N/A
G	0.0	1.4	No Data	N/A	N/A
G	1.4	1.5	184' - well	L	L
G	1.5	4.2	No Data	N/A	N/A
G	4.2	4.3	47' - well	M	L

TABLE A-12 – IMPACT ASSESSMENT TABLE

Geologic Feature: Groundwater

Location			Feature	Impact	
Segment Corridor	Mile From	Mile To	Approximate Groundwater Depth	Initial	Residual
G	4.3	4.9	No Data	N/A	N/A
G	4.9	5.7	<10	H	L
G	5.7	5.8	No Data	N/A	N/A
G	5.8	6.3	<10	H	L
G	6.3	21.2	No Data	N/A	N/A
GV	0.0	6.5	No Data	N/A	N/A
H	0.0	2.5	No Data	N/A	N/A
H	2.5	2.9	<10	H	L
H	2.9	3.4	No Data	N/A	N/A
H	3.4	3.8	<10	H	L
H	3.8	4.2	No Data	N/A	N/A
H	4.2	4.6	<10	H	L
H	4.6	19.8	No Data	N/A	N/A
I	0.0	2.2	No Data	N/A	N/A
I	2.2	2.3	326' - Well	N/A	N/A
I	2.3	2.5	No Data	N/A	N/A
I	2.5	3.0	<10	H	L
I	3.0	3.4	No Data	N/A	N/A
I	3.4	3.9	<10	H	L
I	3.9	4.3	No Data	N/A	N/A
I	4.3	4.7	<10	H	L
I	4.7	6.6	No Data	N/A	N/A
I	6.6	6.9	0-30	H	L
I	6.9	7.3	No Data	N/A	N/A
I	7.3	8.3	0-30	H	L
I	8.3	8.6	No Data	N/A	N/A
I	8.6	8.8	0-30	H	L
I	8.8	9.0	No Data	N/A	N/A
I	9.0	10.7	0-30	H	L
I	10.7	12.6	No Data	N/A	N/A
I	12.6	12.8	0-30	H	L
I	12.8	15.8	No Data	N/A	N/A
I	15.8	16.1	10	H	L
I	16.1	31.9	No Data	N/A	N/A
J	0.0	9.9	No Data	N/A	N/A
J	9.9	10.0	10	H	L
J	10.0	11.9	No Data	N/A	N/A
J	11.9	12.0	10	H	L
K	0.0	1.0	No Data	N/A	N/A
K	1.0	1.6	25	H	L
K	1.6	2.0	30	M	L
K	2.0	2.1	35	M	L
K	2.1	2.6	40	M	L

TABLE A-12 – IMPACT ASSESSMENT TABLE

Geologic Feature: Groundwater

Location			Feature	Impact	
Segment Corridor	**Mile From**	**Mile To**	**Approximate Groundwater Depth**	**Initial**	**Residual**
K	2.6	2.8	35	M	L
K	2.8	2.9	30	M	L
K	2.9	3.1	25	H	L
K	3.1	3.3	20	H	L
K	3.3	3.4	15	H	L
K	3.4	4.6	No Data	N/A	N/A
K	4.6	4.8	15	H	L
K	4.8	7.5	No Data	N/A	N/A
K	7.5	7.8	10	H	L
K	7.8	11.9	No Data	N/A	N/A
K	11.9	12.1	40	M	L
K	12.1	12.2	35	M	L
K	12.2	12.4	30	M	L
K	12.4	12.5	20	H	L
K	12.5	12.7	No Data	N/A	N/A
K	12.7	12.9	30	M	L
K	12.9	13.4	20	H	L
K	13.4	13.5	30	M	L
K	13.5	13.6	50	M	L
K	13.6	13.7	60	L	L
K	13.7	15.4	No Data	N/A	N/A

Notes:
L – Low
M – Moderate
H – High
No – No impact
N/A – Not Applicable

TABLE A-13 – IMPACT ASSESSMENT TABLE
Geologic Feature: Dam Failure Inundation Areas

Location			Feature	Impact	
Segment Corridor	Mile From	Mile To	Dam Failure Inundation Area	Initial	Residual
A	0.0	13.2	No	No	No
B	0.0	26.5	No	No	No
C	0.0	21.7	No	No	No
D	0.0	41.8	No	No	No
D	41.8	42.9	Yes	H	L
D	42.9	46.0	No	No	No
D	46.0	46.4	Yes	H	L
D	46.4	48.2	No	No	No
E	0.0	11.3	No	No	No
F	0.0	0.9	No	No	No
F	0.9	1.8	Yes	H	L
F	1.8	3.6	No	No	No
115	0.0	4.8	No	No	No
G	0.0	1.0	No	No	No
G	1.0	1.7	Yes	H	L
G	1.7	11.8	No	No	No
G	11.8	11.9	Yes	H	L
G	11.9	12.4	No	No	No
G	12.4	13.0	Yes	H	L
G	13.0	21.2	No	No	No
GV	0.0	6.5	No	No	No
H	0.0	10.0	No	No	No
H	10.0	10.3	Yes	H	L
H	10.3	19.8	No	No	No
I	0.0	28.1	No	No	No
I	28.1	28.9	Yes	H	L
I	28.9	31.9	No	No	No
J	0.0	1.8	No	No	No
J	1.8	2.2	Yes	H	L
J	2.2	5.3	No	No	No
J	5.3	6.4	Yes	H	L
J	6.4	12.0	No	No	No
K	0.0	2.7	No	No	No
K	2.7	3.1	Yes	H	L
K	3.1	14.8	No	No	No
K	14.8	15.4	Yes	No	No

Notes:
L – Low
M – Moderate
H – High
No – No impact

APPENDIX B: USDA SOIL TABLE

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	**Mile From**	**Mile To**	**Soil MUSYM**	**Description**	**Soil Erodibility Potential**	**Sensitivity Rating**	**Linear Extensiblity Percent**	**Corrosive Soil Potential (Concrete)**	**Corrosive Soil Potential (Steel)**
A	0.0	0.6	104,	Arizo gravelly loamy sand	Slight	L	No Data	L	M
A	0.6	0.8	104,204,	Arizo gravelly loamy sand, Whitewolf loamy sand	Slight	L	No Data	L, L	M, H
A	0.8	0.9	104,	Arizo gravelly loamy sand	Slight	L	No Data	L	M
A	0.9	1.2	104,150,	Arizo gravelly loamy sand, Muroc sandy loam	Slight	L	No Data	L, L	M, H
A	1.2	1.4	150,	Muroc sandy loam	Slight	L	No Data	L	H
A	1.4	2.8	114,150,	Cajon loamy sand, Muroc sandy loam	Slight	L	No Data	L, L	H, M
A	2.8	3.0	104,114,	Arizo gravelly loamy sand, Cajon loamy sand	Slight	L	No Data	L, L	M, M
A	3.0	8.1	104,	Arizo gravelly loamy sand	Slight	L	No Data	L	M
A	8.1	8.3	104,114,	Arizo gravelly loamy sand, Cajon loamy sand	Slight	L	No Data	L, L	M, M
A	8.3	9.0	114,	Cajon loamy sand	Slight	L	No Data	L	M
A	9.0	9.1	104,114,	Arizo gravelly loamy sand, Cajon loamy sand	Slight	L	No Data	L, L	M, M
A	9.1	9.6	104,	Arizo gravelly loamy sand	Slight	L	No Data	L	M
A	9.6	10.1	104,116,	Arizo gravelly loamy sand, Cajon gravelly loamy sand	Slight	L	No Data	L, L	M, M
A	10.1	10.8	104,	Arizo gravelly loamy sand	Slight	L	No Data	L	M
A	10.8	10.9	104,116,	Arizo gravelly loamy sand, Cajon gravelly loamy sand	Slight	L	No Data	L, L	M, M
A	10.9	11.0	104,116,137,	Arizo gravelly loamy sand, Cajon gravelly loamy sand, Garlock loamy sand	Slight	L	No Data	L, L, L	M, M, H
A	11.0	11.2	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H
A	11.2	11.3	137,	Garlock loamy sand	Slight	L	No Data	L	H
A	11.3	11.4	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H
A	11.4	11.5	116,	Cajon gravelly loamy sand	Slight	L	No Data	L	M
A	11.5	11.6	104,116,	Arizo gravelly loamy sand, Cajon gravelly loamy sand	Slight	L	No Data	L, L	M, M
A	11.6	11.7	104,	Arizo gravelly loamy sand	Slight	L	No Data	L	M
A	11.7	11.8	104,137,	Arizo gravelly loamy sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H
A	11.8	12.0	137,	Garlock loamy sand	Slight	L	No Data	L	H
A	12.0	12.6	114,137,	Cajon loamy sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H
A	12.6	12.7	137,	Garlock loamy sand	Slight	L	No Data	L	H
A	12.7	12.8	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H
A	12.8	13.1	116,	Cajon gravelly loamy sand	Slight	L	No Data	L	M
A	13.1	13.2	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	Slight	L	No Data	L, L	M, M
A	13.2	13.2	114,	Cajon loamy sand	Slight	L	No Data	L	M
B	0.0	0.2	114,	Cajon loamy sand	Slight	L	No Data	L	M
B	0.2	0.3	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	Slight	L	No Data	L, L	M, M

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TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Soil Erodibility Potential	Sensitivity Rating	Linear Extensiblity Percent	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)
B	0.3	0.4	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H
B	0.4	0.8	137,	Garlock loamy sand	Slight	L	No Data	L	H
B	0.8	1.1	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H
B	1.1	1.3	116,	Cajon gravelly loamy sand	Slight	L	No Data	L	M
B	1.3	1.4	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H
B	1.4	1.6	137,	Garlock loamy sand	Slight	L	No Data	L	H
B	1.6	1.7	114,116,137,	Cajon loamy sand, Cajon gravelly loamy sand, Garlock loamy sand	Slight	L	No Data	L, L, L	M, M, H
B	1.7	2.6	116,	Cajon gravelly loamy sand	Slight	L	No Data	L	M
B	2.6	2.9	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	Slight	L	No Data	L, L	M, M
B	2.9	3.3	114,	Cajon loamy sand	Slight	L	No Data	L	M
B	3.3	3.4	114,137,	Cajon loamy sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H
B	3.4	3.5	137,	Garlock loamy sand	Slight	L	No Data	L	H
B	3.5	3.8	113,137,	Cajon sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H
B	3.8	4.0	137,	Garlock loamy sand	Slight	L	No Data	L	H
B	4.0	4.2	113,137,	Cajon sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H
B	4.2	4.3	113,	Cajon sand	Slight	L	No Data	L	M
B	4.3	4.5	113,137,	Cajon sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H
B	4.5	4.6	113,116,	Cajon sand, Cajon gravelly loamy sand	Slight	L	No Data	L, L	M, H
B	4.6	4.7	116,	Cajon gravelly loamy sand	Slight	L	No Data	L	H
B	4.7	4.8	113,116,	Cajon gravelly loamy sand	Slight	L	No Data	L, L	M, H
B	4.8	5.3	113,	Cajon sand	Slight	L	No Data	L	M
B	5.3	5.5	113,114,	Cajon sand, Cajon loamy sand	Slight	L	No Data	L, L	M, M
B	5.5	5.8	114,	Cajon loamy sand	Slight	L	No Data	L	M
B	5.8	6.0	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	Slight	L	No Data	L, L	M, M
B	6.0	6.2	116,	Cajon gravelly loamy sand	Slight	L	No Data	L	M
B	6.2	6.3	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	Slight	L	No Data	L, L	M, M
B	6.3	6.4	114,	Cajon loamy sand	Slight	L	No Data	L	M
B	6.4	6.5	114,137,	Cajon loamy sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H
B	6.5	6.6	137,	Garlock loamy sand	Slight	L	No Data	L	H
B	6.6	7.2	114,137,	Cajon loamy sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H
B	7.2	11.4	114,	Cajon loamy sand	Slight	L	No Data	L	M
B	11.4	11.5	114,171,	Cajon loamy sand, Rosamond clay loam	Slight	L	No Data	L, L	M, H
B	11.5	11.6	114,137,171,	Cajon loamy sand, Garlock loamy sand, Rosamond clay loam	Slight	L	No Data	L, L, L	M, H, H
B	11.6	11.8	137,	Garlock loamy sand	Slight	L	No Data	L	H
B	11.8	11.9	114,137,	Cajon loamy sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	**Mile From**	**Mile To**	**Soil MUSYM**	**Description**	**Soil Erodibility Potential**	**Sensitivity Rating**	**Linear Extensiblity Percent**	**Corrosive Soil Potential (Concrete)**	**Corrosive Soil Potential (Steel)**
B	11.9	12.0	114,137,171,	Cajon loamy sand, Garlock loamy sand, Rosamond clay loam	Slight	L	No Data	L, L, L	M, H, H
B	12.0	12.1	114,171,	Cajon loamy sand, Rosamond clay loam	Slight	L	No Data	L, L	M, H
B	12.1	12.2	171,	Rosamond clay loam	Slight	L	No Data	L	H
B	12.2	12.3	114,171,	Cajon loamy sand, Rosamond clay loam	Slight	L	No Data	L, L	M, H
B	12.3	13.4	114,	Cajon loamy sand	Slight	L	No Data	L	M
B	13.4	13.6	114,125,	Cajon loamy sand, DeStazo sandy loam	Slight	L	No Data	L, L	M, H
B	13.6	13.8	114,	Cajon loamy sand	Slight	L	No Data	L	M
B	13.8	14.2	114,125,	Cajon loamy sand, DeStazo sandy loam	Slight	L	No Data	L, L	M, H
B	14.2	14.9	125,	DeStazo sandy loam	Slight	L	No Data	L	H
B	14.9	15.1	125,126,	DeStazo sandy loam, DeStazo sandy loam	Slight	L	No Data	L, L	H, H
B	15.1	15.3	125,	DeStazo sandy loam	Slight	L	No Data	L	H
B	15.3	15.4	112,125,	Badland- Orthents Complex, DeStazo sandy loam	Severe	H	No Data	No Data, L	No Data, H
B	15.4	15.7	112,	Badland- Orthents Complex	Severe	H	No Data	No Data	No Data
B	15.7	15.8	112,114,CaC,RzF,	Badland- Orthents Complex, Cajon loamy sand, Rough broken land	Severe	H	No Data	No Data, L	L data, M
B	15.8	15.9	114,CaC,HkB,RzF,	Cajon loamy sand	Severe	H	No Data	L	M
B	15.9	16.0	CaC,HkB,Rp,	Cajon loamy sand, Hesperia fine sandy loam, Rosamond loam	Slight	L	No Data	L, L, L	M, H, H
B	16.0	16.2	HkB,Rp,	Heperia fine sandy loam, Rosamond loam	Slight	L	No Data	L, L	H, H
B	16.2	16.4	Rp,	Rosamond loam	Slight	L	No Data	L	H
B	16.4	16.5	HkB,Ro,Rp,	Hesperia fine sandy loam, Rosamond fine sandy loam, Rosamond loam	Slight	L	No Data	L, L, L	H, H, H
B	16.5	16.7	HkB,Ro,	Hesperia fine sandy loam, Rosamond fine sandy loam	Slight	L	No Data	L, L	H, H
B	16.7	16.9	Ro,Rp,	Rosamond fine sandy loam, Rosamond loam	Slight	L	No Data	L, L	H, H
B	16.9	17.0	HkA,Ro,Rp,	Hesperia fine sandy loam, Rosamond fine sandy loam, Rosamond loam	Slight	L	No Data	L, L, L	H, H, H
B	17.0	17.1	HkA,Rp,	Hesperia fine sandy loam, Rosamond loam	Slight	L	No Data	L, L	H, H
B	17.1	17.2	Rp,	Rosamond loam	Slight	L	No Data	L	H
B	17.2	17.3	Rp,Sv,	Rosamond loam, Sunrise sandy loam	Slight	L	No Data	L, L	H, H
B	17.3	17.4	HkA,Rp,Sv,	Hesperia fine sandy loam, Rosamond loam, Sunrise sandy loam	Slight	L	No Data	L, L, L	H, H, H

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Soil Erodibility Potential	Sensitivity Rating	Linear Extensiblity Percent	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)
B	17.4	17.5	HkA,Sv,Sw,	Hesperia fine sandy loam, Sunrise sandy loam, Sunrise sandy loam shallow	Slight	L	No Data	L, L, L	H, H, H
B	17.5	17.6	HkA,Sw,	Hesperia fine sandy loam, Sunrise sandy loam shallow	Slight	L	No Data	L, L	H, H
B	17.6	18.0	Sv,Sw,	Sunrise sandy loam, Sunrise sandy loam shallow	Slight	L	No Data	L, L	H, H
B	18.0	18.1	Sv,	Sunrise sandy loam	Slight	L	No Data	L	H
B	18.1	18.2	Sv,Sw,Sx,	Sunrise sandy loam, Sunrise sandy loam shallow, Sunrise loam	Slight	L	No Data	L, L, L	H, H, H
B	18.2	18.5	Sw,Sx,	Sunrise sandy loam shallow, Sunrise loam	Slight	L	No Data	L, L	H, H
B	18.5	18.7	Sv,Sw,	Sunrise sandy loam, Sunrise sandy loam shallow	Slight	L	No Data	L, L	H, H
B	18.7	19.0	Ro,Sw,	Rosamond fine sandy loam, Sunrise sandy loam shallow	Slight	L	No Data	L, L	H, H
B	19.0	19.1	Ro,Rp,Sv,Sw,	Rosamond fine sandy loam, Rosamond loam, Sunrise sandy loam, Sunrise sandy loam shallow	Slight	L	No Data	L, L, L, L	H, H, H, H
B	19.1	19.3	Rp,Sv,	Rosamond loam, Sunrise sandy loam	Slight	L	No Data	L, L	H, H
B	19.3	19.6	Sv,	Sunrise sandy loam	Slight	L	No Data	L	H
B	19.6	19.7	HgA,Sv,	Hesperia loamy fine sand, Sunrise sandy loam	Slight	L	No Data	L, L	H, H
B	19.7	19.8	HgA,	Hesperia loamy fine sand	Slight	L	No Data	L,	H
B	19.8	19.9	HgA,Ro,	Hesperia loamy fine sand, Rosamond fine sandy loam	Slight	L	No Data	L, L	H, H
B	19.9	20.0	Ro,	Rosamond fine sandy loam	Slight	L	No Data	L	H
B	20.0	20.1	Ro,Rp,	Rosamond fine sandy loam, Rosamond loam	Slight	L	No Data	L, L	H, H
B	20.1	20.2	Rp,	Rosamond loam	Slight	L	No Data	L	H
B	20.2	20.3	Ro,Rp,	Rosamond fine sandy loam, Rosamond loam	Slight	L	No Data	L, L	H, H
B	20.3	20.4	Ro,	Rosamond find sandy loam	Slight	L	No Data	L	H
B	20.4	20.5	Rm2,Ro,Rp,	Rosamond loamy fine sand hummocky, Rosamond fine sandy loam, Rosamond loam	Slight	L	No Data	L, L, L	H, H, H
B	20.5	20.6	Rm2,Rp,	Rosamond loamy fine sand hummocky, Rosamond loam	Slight	L	No Data	L, L	H, H
B	20.6	20.7	HgA,Rm2,Rp,	Hesperia loamy fine sand, Rosamond loamy fine sand hummocky, Rosamond loam	Slight	L	No Data	L, L, L	H, H, H
B	20.7	20.9	HgA,Ro,	Hesperia loamy fine sand, Rosamond fine sandy loam	Slight	L	No Data	L, L	H, H
B	20.9	21.1	Ro,Rp,	Rosamond fine sandy loam, Rosamond loam	Slight	L	No Data	L, L	H, H
B	21.1	21.2	Ro,	Rosamond fine sandy loam	Slight	L	No Data	L	H
B	21.2	21.3	Rm2,Ro,	Rosamond loamy fine sand hummocky, Rosamond fine sandy loam	Slight	L	No Data	L, L	H, H

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Soil Erodibility Potential	Sensitivity Rating	Linear Extensiblity Percent	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)
B	21.3	21.4	Rm,Rm2,	Rosamond loamy fine sand, Rosamond loamy fine sand hummocky	Slight	L	No Data	L, L	H, H
B	21.4	21.6	Rm,Rp,	Rosamond loamy fine sand, Rosamond loam	Slight	L	No Data	L, L	H, H
B	21.6	22.0	Ro,Rp,	Rosamond fine sandy loam, Rosamond loam	Slight	L	No Data	L, L	H, H
B	22.0	22.3	Ro,Rt,	Rosamond fine sandy loam, Rosamond silty clay loam	Slight	L	No Data	L, L	H, H
B	22.3	22.4	HcA,Rt,	Hanford sandy loam, Rosamond silty clay loam	Slight	L	No Data	L, L	L, H
B	22.4	22.5	HcA,HkA,	Hanford sandy loam, Hesperia fine sandy loam	Slight	L	No Data	L, L	L, H
B	22.5	23.0	HkA,	Hesperia fine sandy loam	Slight	L	No Data	L	H
B	23.0	23.2	GsA,HkA,	Greenfield sandy loam, Hesperia fine sandy loam	Slight	L	No Data	L, L	L, H
B	23.2	23.4	GsA,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	Slight	L	No Data	L, L	L, L
B	23.4	23.7	HbA,	Hanford coarse sandy loam	Slight	L	No Data	L	L
B	23.7	23.8	GsA,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	Slight	L	No Data	L, L	L, L
B	23.8	23.9	GsA,GsC,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	Slight	L	No Data	L, L, L	L, L, L
B	23.9	24.0	GsA,GsC,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, L, M	L, L, M
B	24.0	24.2	RcA,	Ramona coarse sandy loam	Slight	L	No Data	M	M
B	24.2	24.3	HbA,RcA,	Hanford coarse sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M	L, M
B	24.3	24.5	HbA,	Hanford coarse sandy loam	Slight	L	No Data	L	L
B	24.5	24.7	GsC,HbA,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	Slight	L	No Data	L, L, L	L, L, L
B	24.7	24.8	GsC,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	Slight	L	No Data	L, L	L, L
B	24.8	24.9	GsA,GsC,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	Slight	L	No Data	L, L, L	L, L, L
B	24.9	25.0	GsA,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	Slight	L	No Data	L, L	L, L
B	25.0	25.7	GsA,	Greenfield sandy loam	Slight	L	No Data	L	L
B	25.7	25.8	GsA,HbA,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	Slight	L	No Data	L, L, L	L, L, L
B	25.8	25.9	GsC,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	Slight	L	No Data	L, L	L, L
B	25.9	26.2	GsC	Greenfield sandy loam	Slight	L	No Data	L	L
B	26.2	26.4	GsC2,	Greenfield sandy loam	Slight	L	No Data	L	L
B	26.4	26.5	GsC	Greenfield sandy loam	Slight	L	No Data	L	L
C	0.0	0.2	114,	Cajon loamy sand	Slight	L	No Data	L	M
C	0.2	0.3	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	Slight	L	No Data	L, L	M, M
C	0.3	0.4	114,116,137,	Cajon loamy sand, Cajon gravelly loamy sand, Garlock loamy sand	Slight	L	No Data	L, L	M, M

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	**Mile From**	**Mile To**	**Soil MUSYM**	**Description**	**Soil Erodibility Potential**	**Sensitivity Rating**	**Linear Extensiblity Percent**	**Corrosive Soil Potential (Concrete)**	**Corrosive Soil Potential (Steel)**
C	0.4	0.5	114,137,	Cajon loamy sand	Slight	L	No Data	L, L	M, H
C	0.5	0.6	114,116,137,	Cajon loamy sand, Cajon gravelly loamy sand, Garlock loamy sand	Slight	L	No Data	L, L, L	M, M, H
C	0.6	1.0	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H
C	1.0	1.1	137,	Garlock loamy sand	Slight	L	No Data	L	H
C	1.1	1.3	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H
C	1.3	1.5	137,	Garlock loamy sand	Slight	L	No Data	L	H
C	1.5	1.7	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H
C	1.7	1.8	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H
C	1.8	2.0	137,	Garlock loamy sand	Slight	L	No Data	L	H
C	2.0	2.1	116,137,	Cajon loamy sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H
C	2.1	2.2	114,116,137,	Cajon loamy sand, Cajon gravelly loamy sand, Garlock loamy sand	Slight	L	No Data	L, L, L	M, M, H
C	2.2	2.5	114,	Cajon loamy sand	Slight	L	No Data	L	M
C	2.5	2.7	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	Slight	L	No Data	L, L	M, M
C	2.7	2.8	116,	Cajon gravelly loamy sand	Slight	L	No Data	L	M
C	2.8	3.1	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	Slight	L	No Data	L, L	M, M
C	3.1	3.2	116,	Cajon gravelly loamy sand	Slight	L	No Data	L	M
C	3.2	3.3	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	Slight	L	No Data	L, L	M, M
C	3.3	3.8	114,	Cajon loamy sand	Slight	L	No Data	L	M
C	3.8	4.0	114,137,	Cajon loamy sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H
C	4.0	4.2	137,	Garlock loamy sand	Slight	L	No Data	L	H
C	4.2	4.3	114,137,	Cajon loamy sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H
C	4.3	4.4	114,	Cajon loamy sand	Slight	L	No Data	L	M
C	4.4	4.5	114,137,	Cajon loamy sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H
C	4.5	4.7	114,	Cajon loamy sand	Slight	L	No Data	L	M
C	4.7	4.8	114,137,	Cajon loamy sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H
C	4.8	5.0	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H
C	5.0	5.1	116,	Cajon gravelly loamy sand	Slight	L	No Data	L	M
C	5.1	5.2	114,116,	Cajon loamy sand	Slight	L	No Data	L, L	M, M
C	5.2	5.7	114,	Cajon loamy sand, Cajon gravelly loamy sand	Slight	L	No Data	L	M
C	5.7	5.8	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	Slight	L	No Data	L, L	M, M
C	5.8	5.9	116,	Cajon gravelly loamy sand, Garlock loamy sand	Slight	L	No Data	L	M

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Soil Erodibility Potential	Sensitivity Rating	Linear Extensiblity Percent	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)
C	5.9	6.0	116,137,	Cajon gravelly loamy sand	Slight	L	No Data	L, L	M, H
C	6.0	6.1	114,137,	Cajon loamy sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H
C	6.1	7.9	114,	Cajon loamy sand	Slight	L	No Data	L	M
C	7.9	8.1	114,137,	Cajon loamy sand, Garlock loamy sand	Slight	L	No Data	L, L	M, H
C	8.1	8.6	114,	Cajon loamy sand	Slight	L	No Data	L	M
C	8.6	8.7	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	Slight	L	No Data	L, L	M, M
C	8.7	9.0	116,	Cajon gravelly loamy sand	Slight	L	No Data	L	M
C	9.0	9.1	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	Slight	L	No Data	L, L	M, M
C	9.1	9.8	114,	Cajon loamy sand	Slight	L	No Data	L	M
C	9.8	9.9	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	Slight	L	No Data	L, L	M, M
C	9.9	10.2	116,	Cajon gravelly loamy sand	Slight	L	No Data	L	M
C	10.2	10.4	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	Slight	L	No Data	L, L	M, M
C	10.4	10.5	116,	Cajon gravelly loamy sand	Slight	L	No Data	L	M
C	10.5	10.7	116,CaC,	Cajon gravelly loamy sand	Slight	L	No Data	L	M
C	10.7	11.7	CaC,	Cajon loamy sand	Slight	L	No Data	L	M
C	11.7	12.1	AaB,CaC,	Adelanto loamy sand, Cajon loamy sand	Slight	L	No Data	L, L	M, H
C	12.1	12.2	CaC,	Cajon loamy sand	Slight	L	No Data	L	M
C	12.2	12.4	AaB,CaC,	Adelanto loamy sand, Cajon loamy sand	Slight	L	No Data	L, L	H, M
C	12.4	13.3	AaB,	Adelanto loamy sand	Slight	L	No Data	L	H
C	13.3	13.4	AaB,CaC,HbC,	Adelanto loamy sand, Cajon loamy sand, Hanford coarse sandy loam	Slight	L	No Data	L, L, L	M, H, L
C	13.4	13.6	CaC,HbC,	Cajon loamy sand, Hanford coarse sandy loam	Slight	L	No Data	L, L	M, L
C	13.6	13.7	CaC,HbC,	Cajon loamy sand, Hanford coarse sandy loam	Slight	L	No Data	L, L	M, L
C	13.7	14.1	HbC,	Hanford coarse sandy loam	Slight	L	No Data	L	L
C	14.1	14.4	HbC,HkB,	Hanford coarse sandy loam, Hesperia fine sandy loam	Slight	L	No Data	L, L	L, H
C	14.4	14.5	CaC,HkB,	Cajon loamy sand, Hesperia fine sandy loam	Slight	L	No Data	L, L	M, H
C	14.5	14.6	CaC,HbC,HkB,	Cajon loamy sand, Hanford coarse sandy loam, Hesperia fine sandy loam	Slight	L	No Data	L, L, L	M, L, H
C	14.6	14.8	CaC,HbC,	Cajon loamy sand, Hanford coarse sandy loam	Slight	L	No Data	L, L	M, L
C	14.8	15.9	HbC,	Hanford coarse sandy loam	Slight	L	No Data	L	L
C	15.9	16.1	GsC,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	Slight	L	No Data	L, L	L, L
C	16.1	16.2	CaC,HbC,	Cajon loamy sand, Hanford coarse sandy loam	Slight	L	No Data	L, L	M, L
C	16.2	17.5	CaC,	Cajon loamy sand	Slight	L	No Data	L	M

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Soil Erodibility Potential	Sensitivity Rating	Linear Extensiblity Percent	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)
C	17.5	17.6	CaC,HdC,HkB,	Cajon loamy sand, Hanford gravelly sandy loam, Hesperia fine sandy loam	Slight	L	No Data	L, L, L	M, L, H
C	17.6	18.3	HdC,HkB,	Hanford gravelly sandy loam, Hesperia fine sandy loam	Slight	L	No Data	L, L	L, H
C	18.3	18.4	HdC,HkB,	Hanford gravelly sandy loam, Hesperia fine sandy loam	Slight	L	No Data	L, L	L, H
C	18.4	18.5	HdC,	Hanford gravelly sandy loam	Slight	L	No Data	L	L
C	18.5	18.8	AsB,HdC,	Arizo gravelly loamy sand, Hanford gravelly sandy loam	Slight	L	No Data	L, L	M, L
C	18.8	19.5	AsB,	Arizo gravelly loamy sand	Slight	L	No Data	L	M
C	19.5	19.7	AsB,CaC,	Arizo gravelly loamy sand, Cajon loamy sand	Slight	L	No Data	L, L	M, M
C	19.7	19.8	CaC,ReC,	Cajon loamy sand, Ramona gravelly sandy loam	Slight	L	No Data	L, M	M, M
C	19.8	20.1	CaC,	Cajon loamy sand	Slight	L	No Data	L	M
C	20.1	20.4	AsB,CaC,	Arizo gravelly loamy sand, Cajon loamy sand	Slight	L	No Data	L, L	M, M
C	20.4	20.6	CaC,	Cajon loamy sand	Slight	L	No Data	L	M
C	20.6	20.8	CaC,HbC,RdE2,	Cajon loamy sand, Hanford coarse sandy loam, Ramona sandy loam	Moderate	M	No Data	L, L, M	M, L, M
C	20.8	21.4	HbC,	Hanford coarse sandy loam	Slight	L	No Data	L	L
C	21.4	21.5	CaC,HbC,	Cajon loamy sand, Hanford coarse sandy loam	Slight	L	No Data	L, L	M, L
C	21.5	21.7	CaC,	Cajon loamy sand	Slight	L	No Data	L	M
D	0.0	0.6	CaC,	Cajon loamy sand	Slight	L	No Data	L	M
D	0.6	0.7	CaC,RdE2,	Cajon loamy sand, Ramona sandy loam	Moderate	M	No Data	L, M	M, M
D	0.7	0.8	CaC,HkB,RdE2,	Cajon loam sand, Hesperia fine sandy loam, Ramona sandy loam	Moderate	M	No Data	L, L, M	M, H, M
D	0.8	0.9	CaC,HkB,	Cajon loamy sand, Hesperia fine sandy loam	Slight	L	No Data	L, L	M, H
D	0.9	1.0	CaC,HkB,	Cajon loamy sand, Hesperia fine sandy loam	Slight	L	No Data	L, L	M, H
D	1.0	1.2	HkB,	Hesperia fine sandy loam	Slight	L	No Data	L	H
D	1.2	1.4	HbC,HkB,	Hanford coarse sandy loam, Hesperia fine sandy loam	Slight	L	No Data	L, L	L, H
D	1.4	1.7	HbC,RdE2,	Hanford coarse sandy loam, Ramona sandy loam	Moderate	M	No Data	L, L	L, M
D	1.7	1.8	HbC,RdE2,	Hanford coarse sandy loam, Ramona sandy loam	Moderate	M	No Data	L, L	L, M
D	1.8	1.9	HbC,	Hanford coarse sandy loam	Slight	L	No Data	L	L
D	1.9	2.4	HbC,RdE2,	Hanford coarse sandy loam, Ramona sandy loam	Moderate	M	No Data	L, L	L, M
D	2.4	2.5	HbC,	Hanford coarse sandy loam	Slight	L	No Data	L	L
D	2.5	2.7	HbC,HkB,	Hanford coarse sandy loam, Hesperia fine sandy loam	Slight	L	No Data	L, L	L, H
D	2.7	2.8	GsC,HkB,	Greenfield sandy loam, Hesperia fine sandy loam	Slight	L	No Data	L, L	L, H

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	**Mile From**	**Mile To**	**Soil MUSYM**	**Description**	**Soil Erodibility Potential**	**Sensitivity Rating**	**Linear Extensiblity Percent**	**Corrosive Soil Potential (Concrete)**	**Corrosive Soil Potential (Steel)**
D	2.8	3.1	GsC	Greenfield sandy loam	Slight	L	No Data	L	L
D	3.1	3.3	GsC,HaB2,	Greenfield sandy loam, Hanford loamy sand	Slight	L	No Data	L, L	L, L
D	3.3	3.5	GsC	Greenfield sandy loam	Slight	L	No Data	L	L
D	3.5	3.7	GsC,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	Slight	L	No Data	L, L	L, L
D	3.7	3.9	HbC,	Hanford coarse sandy loam	Slight	L	No Data	L	L
D	3.9	4.2	HaB2,HbC,	Hanford loamy sand, Hanford coarse sandy loam	Slight	L	No Data	L, L	L, L
D	4.2	4.4	HaB2,	Hanford loamy sand	Slight	L	No Data	L	L
D	4.4	4.5	HaB2,HbC,	Hanford loamy sand, Hanford coarse sandy loam	Slight	L	No Data	L, L	L, L
D	4.5	6.1	HbC,	Hanford coarse sandy loam	Slight	L	No Data	L	L
D	6.1	6.2	HbC,HcC,	Hanford coarse sandy loam, Hanford sandy loam	Slight	L	No Data	L, L	L, L
D	6.2	6.5	HcC,	Hanford sandy loam	Slight	L	No Data	L	L
D	6.5	6.7	HbC,HcC,	Hanford coarse sandy loam, Hanford sandy loam	Slight	L	No Data	L, L	L, L
D	6.7	7.4	HbC,	Hanford coarse sandy loam	Slight	L	No Data	L	L
D	7.4	7.5	HbC,HbD,	Hanford coarse sandy loam	Slight	L	No Data	L, L	L, L
D	7.5	7.6	HbC,HbD,HcC,	Hanford coarse sandy loam, Hanford sandy loam	Slight	L	No Data	L, L, L	L, L, L
D	7.6	7.7	HbC,HcC,	Hanford coarse sandy loam, Hanford sandy loam	Slight	L	No Data	L, L	L, L
D	7.7	7.9	HcC,	Hanford coarse sandy loam	Slight	L	No Data	L	L
D	7.9	8.0	HaB2,HcC,	Hanford loamy sand, Hanford sandy loam	Slight	L	No Data		
D	8.0	8.5	HaB2,	Hanford loamy sand	Slight	L	No Data	L	L
D	8.5	8.6	HaB2,HbC,	Hanford loamy sand, Hanford coarse sandy loam	Slight	L	No Data	L, L	L, L
D	8.6	8.7	HaB2,HbC,HcC,	Hanford loamy sand, Hanford coarse sandy loam, Hanford sandy loam	Slight	L	No Data	L, L, L	L, L, L
D	8.7	8.8	HbC,HcC,	Hanford coarse sandy loam, Hanford sandy loam	Slight	L	No Data	L, L	L, L
D	8.8	9.3	HcC,	Hanford coarse sandy loam	Slight	L	No Data	L	L
D	9.3	9.7	HaB2,HbC,HcC,	Hanford loamy sand, Hanford coarse sandy loam, Hanford sandy loam	Slight	L	No Data	L, L, L	L, L, L
D	9.7	9.8	HaB2,HbC,	Hanford loam sand, Hanford coarse sandy loam	Slight	L	No Data	L, L	L, L
D	9.8	9.9	DuD,HaB2,	Dune land, Hanford loamy sand	Moderate	M	No Data	No Data, L	No Data, L
D	9.9	10.0	DuD,	Dune land	Moderate	M	No Data	No Data	No Data
D	10.0	10.2	DuD,HaB2,	Dune land, Hanford loamy sand	Moderate	M	No Data	No Data, L	No Data, L
D	10.2	10.3	HaB2,	Hanford loamy sand	Slight	L	No Data	L	L
D	10.3	10.4	DuD,HaB2,	Dune land, Hanford loamy sand	Moderate	M	No Data	No Data, L	No Data, L
D	10.4	10.7	DuD,	Dune land	Moderate	M	No Data	No Data	No Data

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Soil Erodibility Potential	Sensitivity Rating	Linear Extensiblity Percent	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)
D	10.7	10.8	DuD,HaB2,	Dune land, Hanford loamy sand	Moderate	M	No Data	No Data, L	No Data, L
D	10.8	10.9	DuD,HaB2,VbA,	Dune land, Hanford loamy sand, Vernalis loam	Moderate	M	No Data	No Data, L, L	No Data, L, H
D	10.9	11.2	VbA,	Vernalis loam	Slight	L	No Data	L	H
D	11.2	11.4	HcC,VbA,VcA,	Hanford sandy loam, Vernalis loam, Vernalis clay loam	Slight	L	No Data	L, L, L	L, H, H
D	11.4	13.1	HcC,	Hanford sandy loam	Slight	L	No Data	L	L
D	13.1	13.3	HcC,ObC,	Hanford sandy loam, Oak Glen sandy loam	Slight	L	No Data	L, L	L, L
D	13.3	13.4	ObC,	Oak Glen sandy loam	Slight	L	No Data	L	L
D	13.4	13.5	ObC,VbB,	Oak Glen sandy loam, Vernalis loam	Slight	L	No Data	L, L	L, H
D	13.5	13.6	ObC,VbA,VbB,	Oak Glen sandy loam, Vernalis loam	Slight	L	No Data	L, L	L, H
D	13.6	13.7	VbA,VbB,	Vernalis loam	Slight	L	No Data	L	H
D	13.7	14.0	VbB,	Vernalis loam	Slight	L	No Data	L	H
D	14.0	14.4	ObC,VbB,	Oak Glen sandy loam, Vernalis loam	Slight	L	No Data	L, L	L, H
D	14.4	14.5	ObC,OdC,VbB,	Oak Glen sandy loam, Oak Glen loam, Vernalis Loam	Slight	L	No Data	L, L, L	L, L, H
D	14.5	14.7	OdC,VbB,	Oak Glen loam, Vernalis Loam	Slight	L	No Data	L, L	L, H
D	14.7	15.4	OdC,	Oak Glen loam	Slight	L	No Data	L	L
D	15.4	15.6	OcC,OdC,	Oak Glen gravelly sandy loam, Oak Glen loam	Slight	L	No Data	L, L	L, L
D	15.6	15.7	OdC,RcC,VbA,	Oak Glen loam, Ramona coarse sandy loam, Vernalis loam	Slight	L	No Data	L, M, L	L, M, H
D	15.7	15.9	OdC,VbA,	Oak Glen loam, Vernalis Loam	Slight	L	No Data	L, L	L, H
D	15.9	16.3	OdC,	Oak Glen loam	Slight	L	No Data	L	L
D	16.3	16.5	OdC,TrF,	Oak Glen loam, Temescal-Rock land complex	Severe	H	No Data	L, L	L, L
D	16.5	16.6	OaC,OdC,TrF,	Oakdale sandy loam, Oak Glen loam, Temescal-Rock land complex	Severe	H	No Data	L, L, L	L, L, L
D	16.6	16.7	OaC,OdC,ReC,	Oakdale sandy loam, Oak Glen loam, Ramona gravelly sandy loam	Slight	L	No Data	L, L, M	L, L, M
D	16.7	16.8	OaC,ReC,	Oakdale sandy loam, Ramona gravelly sandy loam	Slight	L	No Data	L, M	L, M
D	16.8	17.1	ReC,	Ramona gravelly sandy loam	Slight	L	No Data	M	M
D	17.1	17.2	ReC,TrF,	Ramona gravelly sandy loam, Temescal-Rock land complex	Severe	H	No Data	M, L	M, L
D	17.2	17.5	ReC,	Ramona gravelly sandy loam	Slight	L	No Data	M	M
D	17.5	17.6	Co,ReC,	Chino loam, Ramona gravelly sandy loam	Slight	L	No Data	L, M	H, M
D	17.6	17.7	Co,MhF2,ReC,	Chino loam, Millsholm rocky loam, Ramona gravelly sandy loam	Severe	H	No Data	L, L, M	H, L, M
D	17.7	17.9	MhF2,ReC,	Millsholm rocky loam, Ramona gravelly sandy loam	Severe	H	No Data	L, M	L, M

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Soil Erodibility Potential	Sensitivity Rating	Linear Extensiblity Percent	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)
D	17.9	18.0	MhF2,OdC,ReC,	Millsholm rocky loam, Oak Glen loam, Ramona gravelly sandy loam	Severe	H	No Data	L, L, M	L, L, M
D	18.0	18.7	OdC,RcC,	Oak Glen loam, Ramona coarse sandy loam	Slight	L	No Data	L, M	L, M
D	18.7	18.8	RcC,	Ramona coarse sandy loam	Slight	L	No Data	M	M
D	18.8	19.2	OdC,RcC,	Oak Glen loam, Ramona coarse sandy loam	Slight	L	No Data	L, M	L, M
D	19.2	19.5	MhF2,OdC,	Millsholm rocky loam, Oak Glen loam	Severe	H	No Data	L, L	L, L
D	19.5	20.4	OdC,	Oak Glen loam	Slight	L	No Data	L	L
D	20.4	20.5	GoF2,OdC,	Gorman sandy loam, Oak Glen loam	Severe	H	No Data	M, L	M, L
D	20.5	20.6	GoF2,OcC,OdC,	Gorman sandy loam, Oak Glen gravelly sandy loam, Oak Glen loam	Severe	H	No Data	M, L, L	M, L, L
D	20.6	20.8	GoF2,OcC,	Gorman sandy loam, Oak Glen gravelly sandy loam	Severe	H	No Data	M, L	M, L
D	20.8	20.9	GoF2,GuF,OcC,	Gorman sandy loam, Gullied land, Oak Glen gravelly sandy loam	Severe	H	No Data	M, No Data, L	M, No Data, L
D	20.9	21.0	GuF,OcC,	Gullied land, Oak Glen gravelly sandy loam	Severe	H	No Data	No Data, L	No Data, L
D	21.0	21.1	GoD2,GuF,OcC,	Gorman sandy loam, Gullied land, Oak Glen gravelly sandy loam	Severe	H	No Data	M, No Data, L	M, No Data, L
D	21.1	21.2	GoE2,GuF,ObC,	Gorman sandy loam, Gullied land, Oak Glen sandy loam	Severe	H	No Data	M, No Data, L	M, No Data, L
D	21.2	21.3	GoD2,GoE2,GuF,	Gorman sandy loam, Gullied land	Severe	H	No Data	M, M, No Data	M, M, No Data
D	21.3	21.4	GoD2,GoF2,GuF,	Gorman sandy loam, Gullied land	Severe	H	No Data	M, M, No Data	M, M, No Data
D	21.4	21.5	GoD2,GoF2,	Gorman sandy loam	Severe	H	No Data	M, M	M, M
D	21.5	21.6	GoF2,	Gorman sandy loam	Severe	H	No Data	M	M
D	21.6	21.7	GoF2,GuF,	Gorman sandy loam, Gullied land	Severe	H	No Data	M, No Data	M, No Data
D	21.7	21.9	GoD2,GoE2,GoF2,GuF,	Gorman sandy loam, Gullied land	Severe	H	No Data	M, M, M, No Data	M, M, M, No Data
D	21.9	22.0	GoE2,GoF2,	Gorman sandy loam	Severe	H	No Data	M, M	M, M
D	22.0	22.2	GoD2,GoF2,	Gorman sandy loam	Severe	H	No Data	M, M	M, M
D	22.2	22.5	GoE2,GoF2,	Gorman sandy loam	Severe	H	No Data	M, M	M, M
D	22.5	22.8	GoE2,GoF2,GuF,	Gorman sandy loam, Gullied land	Severe	H	No Data	M, M, M, No Data	M, M, M, No Data
D	22.8	22.9	GoF2,GuF,RzF,	Gorman sandy loam, Gullied land, Rough broken land	Severe	H	No Data	M, No Data	M, No Data
D	22.9	23.0	GuF,RzF,	Gullied land, Rough broken land	Severe	H	No Data	No Data	No Data
D	23.0	23.1	GuF,	Gullied land	Severe	H	No Data	No Data	No Data
D	23.1	23.3	75,GuF,	Trigo-Calleguas families-Haploxeralfs complex, Gullied land	Very Severe	H	No Data	No Data	No Data
D	23.3	23.6	75,	Trigo-Calleguas families-Haploxeralfs complex	Very Severe	H	No Data	No Data	No Data

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Soil Erodibility Potential	Sensitivity Rating	Linear Extensiblity Percent	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)
D	23.6	23.8	75,GuF,	Trigo-Calleguas families-Haploxeralfs complex, Gullied land	Very Severe	H	No Data	No Data	No Data
D	23.8	24.2	75,	Trigo-Calleguas families-Haploxeralfs complex	Very Severe	H	No Data	No Data	No Data
D	24.2	25.0	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	Very Severe	H	No Data	No Data	No Data
D	25.0	25.1	75,	Trigo-Calleguas families-Haploxeralfs complex	Very Severe	H	No Data	No Data	No Data
D	25.1	25.4	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	Very Severe	H	No Data	No Data	No Data
D	25.4	26.0	75,	Trigo-Calleguas families-Haploxeralfs complex	Very Severe	H	No Data	No Data	No Data
D	26.0	26.2	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	Very Severe	H	No Data	No Data	No Data
D	26.2	26.6	74,	Trigo-Calleguas families-Rock outcrop complex	Very Severe	H	No Data	No Data	No Data
D	26.6	26.9	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	Very Severe	H	No Data	No Data	No Data
D	26.9	28.2	75,	Trigo-Calleguas families-Haploxeralfs complex	Very Severe	H	No Data	No Data	No Data
D	28.2	28.5	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	Very Severe	H	No Data	No Data	No Data
D	28.5	28.8	75,	Trigo-Calleguas families-Haploxeralfs complex	Very Severe	H	No Data	No Data	No Data
D	28.8	28.9	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	Very Severe	H	No Data	No Data	No Data
D	28.9	29.6	75,	Trigo-Calleguas families-Haploxeralfs complex	Very Severe	H	No Data	No Data	No Data
D	29.6	29.8	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	Very Severe	H	No Data	No Data	No Data
D	29.8	30.2	74,	Trigo-Calleguas families-Rock outcrop complex	Very Severe	H	No Data	No Data	No Data

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	**Mile From**	**Mile To**	**Soil MUSYM**	**Description**	**Soil Erodibility Potential**	**Sensitivity Rating**	**Linear Extensiblity Percent**	**Corrosive Soil Potential (Concrete)**	**Corrosive Soil Potential (Steel)**
D	30.2	30.4	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	Very Severe	H	No Data	No Data	No Data
D	30.4	30.7	75,		Very Severe	H	No Data	No Data	No Data
D	30.7	30.9	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	Very Severe	H	No Data	No Data	No Data
D	30.9	31.2	74,	Trigo-Calleguas families-Rock outcrop complex	Very Severe	H	No Data	No Data	No Data
D	31.2	31.3	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	Very Severe	H	No Data	No Data	No Data
D	31.3	32.7	75,	Trigo-Calleguas families-Haploxeralfs complex	Very Severe	H	No Data	No Data	No Data
D	32.7	32.8	72,75,	Osito-Trigo families complex, Trigo-Calleguas families-Haploxeralfs complex	Very Severe	H	No Data	No Data	No Data
D	32.8	34.7	72,	Osito-Trigo families complex	Severe	H	No Data	No Data	No Data
D	34.7	35.0	72,82,	Osito-Trigo families complex, Vertic Xerochrepts	Severe	H	No Data, 7.5	No Data	No Data
D	35.0	36.3	82,	Vertic Xerochrepts	Moderate	M	7.5	No Data	No Data
D	36.3	36.5	72,82,	Osito-Trigo families complex, Vertic Xerochrepts	Severe	H	No Data, 7.5	No Data	No Data
D	36.5	37.2	72,	Osito-Trigo families complex	Severe	H	No Data	No Data	No Data
D	37.2	37.3	72,75,MhF2,	Osito-Trigo families complex, Trigo-Calleguas families-Haploxeralfs complex, Millsholm rocky loam	Very Severe	H	No Data	No Data, L	No Data, L
D	37.3	37.4	75,MhF2,	Trigo-Calleguas families-Haploxeralfs complex, Millsholm rocky loam	Very Severe	H	No Data	No Data, L	No Data, L
D	37.4	37.6	MhF2,	Millsholm rocky loam	Severe	H	No Data	L	L
D	37.6	37.9	MhE2,MhF2,	Millsholm rocky loam,	Severe	H	No Data	L, L	L, L
D	37.9	38.5	MhE2,	Millsholm rocky loam	Moderate	M	No Data	L	L
D	38.5	38.9	MhE2,MhF2,	Millsholm rocky loam,	Severe	H	No Data	L, L	L, L
D	38.9	39.1	MhF2,	Millsholm rocky loam	Severe	H	No Data	L	L
D	39.1	39.2	CmF,MhF2,	Castaic-Balcom silty clay loams, Millsholm rocky loam	Severe	H	No Data	L, L	H, L
D	39.2	40.1	CmF,	Castaic-Balcom silty clay loams	Severe	H	No Data	L	H
D	40.1	40.3	CmE,CmF,	Castaic-Balcom silty clay loams	Severe	H	No Data	L, L	H, H
D	40.3	40.4	CmE,	Castaic-Balcom silty clay loams	Moderate	M	No Data	L	H
D	40.4	40.6	CmE,CmF,	Castaic-Balcom silty clay loams	Severe	H	No Data	L, L	H, H
D	40.6	41.4	CmF,	Castaic-Balcom silty clay loams	Severe	H	No Data	L	H
D	41.4	41.7	CmE,CmF,	Castaic-Balcom silty clay loams	Severe	H	No Data	L, L	H, H

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	**Mile From**	**Mile To**	**Soil MUSYM**	**Description**	**Soil Erodibility Potential**	**Sensitivity Rating**	**Linear Extensiblity Percent**	**Corrosive Soil Potential (Concrete)**	**Corrosive Soil Potential (Steel)**
D	41.7	41.9	CmF,	Castaic-Balcom silty clay loams	Severe	H	No Data	L	H
D	41.9	42.0	CmF,HcC,	Castaic-Balcom silty clay loams, Hanford sandy loam	Severe	H	No Data	L, L	H, L
D	42.0	42.1	CmF,HcA,HcC,	Castaic-Balcom silty clay loams, Hanford sandy loam	Severe	H	No Data	L, L, L	H, L, L
D	42.1	42.2	CyA,HcA,HcC,	Cortina sandy loam, Hanford sandy loam,	Slight	L	No Data	M, L, L	M, L, L
D	42.2	42.3	CyA,Rg,	Cortina sandy loam, Riverwash	Slight	L	No Data	M, No Data	M, No Data
D	42.3	42.4	CmF,Rg,	Castaic-Balcom silty clay loams, Riverwash	Severe	H	No Data	L, No Data	H, No Data
D	42.4	42.8	CmF,	Castaic-Balcom silty clay loams	Severe	H	No Data	L	H
D	42.8	43.0	CmF,MhE2,	Castaic-Balcom silty clay loams, Millsholm rocky loam	Severe	H	No Data	L, L	H, L
D	43.0	43.1	MhE2,	Millsholm rocky loam	Moderate	M	No Data	L	L
D	43.1	43.2	CmF2,MhE2,	Castaic-Balcom silty clay loams, Millsholm rocky loam	Severe	H	No Data	L, L	H, L
D	43.2	43.3	26,CmF2,MhE2,	Stonyford-Millsholm families complex, Castaic-Balcom silty clay loams, Millsholm rocky loam	Severe	H	No Data	No Data, L, L	No Data, H, L
D	43.3	43.8	26,	Stonyford-Millsholm families complex	Severe	H	No Data	No Data	No Data
D	43.8	43.9	26,7,	Stonyford-Millsholm families complex, Hanford family	Severe	H	No Data	No Data	No Data
D	43.9	44.6	26,	Stonyford-Millsholm families complex	Severe	H	No Data	No Data	No Data
D	44.6	44.8	26,7,	Stonyford-Millsholm families complex, Hanford family	Severe	H	No Data	No Data	No Data
D	44.8	45.0	12,26,	Mollic Haploxeralfs, Stonyford-Millsholm families complex	Severe	H	No Data	No Data	No Data
D	45.0	45.1	12,ScE,	Mollic Haploxeralfs, Saugas loam	Moderate	M	No Data	No Data, L	No Data, L
D	45.1	45.3	12,CnG3,ScE,	Mollic Haploxeralfs, Castaica and Saugas soils, Saugas loam	Severe	H	No Data	No Data, L, L	No Data, H, L
D	45.3	45.5	ScE,ScF2,	Saugas loam	Severe	H	No Data	L, L	L, L
D	45.5	45.6	CmF,ScE,ScF2,	Castaic-Balcom silty clay loams, Saugas loam	Severe	H	No Data	L, L, L	H, L, L
D	45.6	45.7	CmF,ScF2,	Castaic-Balcom silty clay loams, Saugas loam	Severe	H	No Data	L, L	H, L
D	45.7	45.8	CmF,CnG3,ScE,ScF2,	Castaic-Balcom silty clay loams, Castaic and Saugus soils, Saugas loam	Severe	H	No Data	L, L, L, L	H, H, L, L
D	45.8	46.0	CnG3,ScF2,	Castaic and Saugus soils, Saugas loam	Severe	H	No Data	L, L	H, L
D	46.0	46.1	ScF2,	Saugas loam	Severe	H	No Data	L	L
D	46.1	46.2	Sa,ScF2,YoC,	Sandy alluvial land, Saugas loam, Yolo loam	Severe	H	No Data	L, L, L	H, L, L

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	**Mile From**	**Mile To**	**Soil MUSYM**	**Description**	**Soil Erodibility Potential**	**Sensitivity Rating**	**Linear Extensiblity Percent**	**Corrosive Soil Potential (Concrete)**	**Corrosive Soil Potential (Steel)**
D	46.2	46.3	Sa,YoC,	Sandy alluvial land, Yolo loam	Slight	L	No Data	L, L	H, L
D	46.3	46.4	MfC,Sa,ScE,ScF2,	Metz loamy sand, Sandy alluvial land, Saugas loam,	Severe	H	No Data	L, L, L	H, L, L
D	46.4	46.5	CmF2,HcC,ScE,ScF2,ZaC,	Hanford sandy loam, Saugas loam, Zamora loam	Severe	H	No Data	L, L, L, L, L	H, L, L, L, H
D	46.5	46.6	15,CmF2,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex, Castaic-Balcom silty clay loams	Severe	H	No Data	No Data, L	No Data, H
D	46.6	47.4	15,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	Severe	H	No Data	No Data	No Data
D	47.4	47.5	12,15,	Mollic Haploxeralfs, Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	Severe	H	No Data	No Data	No Data
D	47.5	47.9	12,	Mollic Haploxeralfs	Moderate	M	No Data	No Data	No Data
D	47.9	48.1	12,15,	Mollic Haploxeralfs, Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	Severe	H	No Data	No Data	No Data
D	48.1	48.2	15,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	Severe	H	No Data	No Data	No Data
E	0.0	0.3	CaC,	Cajon loamy sand	Slight	L	No Data		
E	0.3	0.9	CaC,HkB,	Cajon loamy sand, Hesperia fine sandy loam	Slight	L	No Data	L, L	M, H
E	0.9	1.0	HkB,Rp,	Hesperia fine sandy loam, Rosamond loam	Slight	L	No Data	L, L	H, H
E	1.0	1.5	Rp,	Rosamond loam	Slight	L	No Data	L	H
E	1.5	1.6	Ro,Rp,	Rosamond fine sandy loam, Rosamond loam	Slight	L	No Data	L, L	H, H
E	1.6	1.8	HkB,Ro,	Hesperia fine sandy loam, Rosamond fine sandy loam	Slight	L	No Data	L, L	H, H
E	1.8	1.9	HkA,HkB,Ro,	Hesperia fine sandy loam, Rosamond fine sandy loam	Slight	L	No Data	L, L, L	H, H, H
E	1.9	2.2	HkA,	Hesperia fine sandy loam	Slight	L	No Data	L	H
E	2.2	2.3	HkA,Rp,	Hesperia fine sandy loam, Rosamond loam	Slight	L	No Data	L, L	H, H
E	2.3	2.4	HgA2,HkA,Ro,Rp,	Hesperia loamy fine sand, Hesperia fine sandy loam, Rosamond fine sandy loam, Rosamond loam	Slight	L	No Data	L, L, L, L	H, H, H, H
E	2.4	2.5	HgA2,Ro,	Hesperia loamy fine sand, Rosamond fine sandy loam	Slight	L	No Data	L, L	H, H
E	2.5	2.6	Ro,	Rosamond fine sandy loam	Slight	L	No Data	L	H

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Soil Erodibility Potential	Sensitivity Rating	Linear Extensiblity Percent	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)
E	2.6	2.8	Rm2,Ro,	Rosamond loamy fine sand, hummocky, Rosamond fine sandy loam	Slight	L	No Data	L, L	H, H
E	2.8	2.9	Rm,Rm2,Ro,	Rosamond loamy fine sand, Rosamond loamy fine sand, hummocky, Rosamond fine sandy loam	Slight	L	No Data	L, L, L	H, H, H
E	2.9	3.1	Rm,Ro,	Rosamond loamy fine sand, Rosamond fine sandy loam	Slight	L	No Data	L, L	H, H
E	3.1	3.3	Ro,	Rosamond fine sandy loam	Slight	L	No Data	L	H
E	3.3	4.0	Rm,Ro,	Rosamond loamy fine sand, Rosamond fine sandy loam	Slight	L	No Data	L, L	H, H
E	4.0	4.3	Ro,	Rosamond fine sandy loam	Slight	L	No Data	L	H
E	4.3	4.5	Ro,Rp,	Rosamond fine sandy loam, Rosamond loam	Slight	L	No Data	L, L	H, H
E	4.5	4.6	Ro,Rp,Rt,	Rosamond fine sandy loam, Rosamond loam, Rosamond silty clay loam	Slight	L	No Data	L, L, L	H, H, H
E	4.6	4.7	Rp,Rt,	Rosamond loam, Rosamond silty clay loam	Slight	L	No Data	L, L	H, H
E	4.7	5.1	Ro,Rt,	Rosamond loam, Rosamond silty clay loam	Slight	L	No Data	L, L	H, H
E	5.1	5.2	Ro,Rp,Rt,	Rosamond fine sandy loam, Rosamond loam, Rosamond silty clay loam	Slight	L	No Data	L, L, L	H, H, H
E	5.2	5.6	Rp,Rt,	Rosamond loam, Rosamond silty clay loam	Slight	L	No Data	L, L	H, H
E	5.6	5.9	Ro,Rp,	Rosamond fine sandy loam, Rosamond loam	Slight	L	No Data	L, L	H, H
E	5.9	6.0	HbC,Ro,	Hanford coarse sandy loam, Rosamond fine sandy loam	Slight	L	No Data	L, L	L, H
E	6.0	6.1	HbC,HkA,Ro,	Hanford coarse sandy loam, Hesperia fine sandy loam, Rosamond fine sandy loam	Slight	L	No Data	L, L, L	L, H, H
E	6.1	6.2	HkA,	Hesperia fine sandy loam	Slight	L	No Data	L	H
E	6.2	6.3	HbA,HkA,	Hanford coarse sandy loam, Hesperia fine sandy loam	Slight	L	No Data	L, L	L, H
E	6.3	6.4	HbA,HcA,HkA,	Hanford coarse sandy loam, Hanford sandy loam, Hesperia fine sandy loam	Slight	L	No Data	L, L, L	L, L, H
E	6.4	6.5	HbA,HcA,Ro,	Hanford coarse sandy loam, Hanford sandy loam, Rosamond fine sandy loam	Slight	L	No Data	L, L, L	L, L, H
E	6.5	6.7	HcA,Ro,	Hanford sandy loam, Rosamond fine sandy loam	Slight	L	No Data	L, L	L, H
E	6.7	6.9	HcA,	Hanford sandy loam	Slight	L	No Data	L	L
E	6.9	7.0	HcA,RcA,	Hanford sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M	L, M
E	7.0	7.1	RcA,	Ramona coarse sandy loam	Slight	L	No Data	M	M

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Soil Erodibility Potential	Sensitivity Rating	Linear Extensiblity Percent	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)
E	7.1	7.4	HbA,RcA,	Hanford coarse sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M	L, M
E	7.4	7.6	RcA,	Ramona coarse sandy loam	Slight	L	No Data	M	M
E	7.6	7.7	GsA,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M	L, M
E	7.7	7.8	GsA,GsC2,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, L, M	L, L, M
E	7.8	7.9	GsC2,	Greenfield sandy loam	Slight	L	No Data	L	L
E	7.9	8.0	GsC	Greenfield sandy loam	Slight	L	No Data	L	L
E	8.0	8.1	GsC,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	Slight	L	No Data	L, L	L, L
E	8.1	8.2	GsA,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	Slight	L	No Data	L, L	L, L
E	8.2	8.3	GsA,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M	L, M
E	8.3	8.4	GsA,	Greenfield sandy loam	Slight	L	No Data	L	L
E	8.4	8.5	GsA,GsC,	Greenfield sandy loam	Slight	L	No Data	L, L	L, L
E	8.5	8.6	GsA,GsC,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	Slight	L	No Data	L, L, L	L, L, L
E	8.6	8.8	GsC,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	Slight	L	No Data	L, L	L, L
E	8.8	9.1	GsC	Greenfield sandy loam	Slight	L	No Data	L	L
E	9.1	9.2	GsC,VsD2,	Greenfield sandy loam, Vista coarse sandy loam	Slight	L	No Data	L, L	L, L
E	9.2	9.3	VsD2,VsE2,	Vista coarse sandy loam	Moderate	M	No Data	L, L	L, L
E	9.3	9.5	VsE2,	Vista coarse sandy loam	Moderate	M	No Data	L	L
E	9.5	9.6	VsD2,VsE2,	Vista coarse sandy loam	Moderate	M	No Data	L, L	L, L
E	9.6	9.7	GsC,VsD2,VsE2,	Greenfield sandy loam, Vista coarse sandy loam	Moderate	M	No Data	L, L, L	L, L, L
E	9.7	9.8	GsC,VsD2,	Greenfield sandy loam, Vista coarse sandy loam	Slight	L	No Data	L, L	L, L
E	9.8	10.0	GsC	Greenfield sandy loam	Slight	L	No Data	L	L
E	10.0	10.1	GsA,GsC,	Greenfield sandy loam	Slight	L	No Data	L, L	L, L
E	10.1	10.2	GsA,	Greenfield sandy loam	Slight	L	No Data	L	L
E	10.2	10.3	GsA,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	Slight	L	No Data	L, L	L, L
E	10.3	10.4	HbA,RcB,	Hanford coarse sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M	L, M
E	10.4	10.5	GsA,HbA,RcB,	Greenfield sandy loam, Hanford coarse sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, L, M	L, L, M
E	10.5	10.6	GsA,	Greenfield sandy loam	Slight	L	No Data	L	L
E	10.6	10.7	GsA,GsC,	Greenfield sandy loam	Slight	L	No Data	L, L	L, L
E	10.7	10.9	GsC	Greenfield sandy loam	Slight	L	No Data	L	L
E	10.9	11.1	GsC2,	Greenfield sandy loam	Slight	L	No Data	L	L
E	11.1	11.3	GsC	Greenfield sandy loam	Slight	L	No Data	L	L
F1	0.0	0.2	GsC	Greenfield sandy loam	Slight	L	No Data	L	L

TABLE B-1 – USDA SOILS

Location			**Feature**						
Segment Corridor	**Mile From**	**Mile To**	**Soil MUSYM**	**Description**	**Soil Erodibility Potential**	**Sensitivity Rating**	**Linear Extensiblity Percent**	**Corrosive Soil Potential (Concrete)**	**Corrosive Soil Potential (Steel)**
F2	0.2	0.3	GsC,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	Slight	L	No Data	L, L	L, L
F2	0.3	0.4	GsA,HbA,RcA,	Greenfield sandy loam, Hanford coarse sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, L, M	L, L, M
F2	0.4	0.5	RcA,	Ramona coarse sandy loam	Slight	L	No Data	M	M
F2	0.5	0.6	HcA,RcA,	Hanford sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M	L, M
F2	0.6	0.7	GsC2,HcA,RcA,	Greenfield sandy loam, Hanford sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, L, M	L, L, M
F2	0.7	0.8	GsC2,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M	L, M
F2	0.8	1.1	GsC	Greenfield sandy loam	Slight	L	No Data	L	L
F2	1.1	1.3	GsA,GsC,	Greenfield sandy loam	Slight	L	No Data	L, L	L, L
F2	1.3	1.7	GsA,	Greenfield sandy loam	Slight	L	No Data	L	L
F2	1.7	2.1	GsA,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M	L, M
F2	2.1	2.3	RcA,	Ramona coarse sandy loam	Slight	L	No Data	M	M
F2	2.3	2.5	GsC,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M	L, M
F2	2.5	2.8	GsC	Greenfield sandy loam	Slight	L	No Data	L	L
115	0.0	0.2	GsC	Greenfield sandy loam	Slight	L	No Data	L	L
115	0.2	0.3	GsC,GsD2,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	Slight	L	No Data	L, L, L	L, L, L
115	0.3	0.4	HbA,RcA,	Hanford sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M	L, M
115	0.4	0.7	RcA,	Ramona coarse sandy loam	Slight	L	No Data	M	M
115	0.7	0.8	GsC2,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M	L, M
115	0.8	0.9	GsC2,	Greenfield sandy loam	Slight	L	No Data	L	L
115	0.9	1.0	GsA,GsC,	Greenfield sandy loam	Slight	L	No Data	L, L	L, L
115	1.0	1.1	GsA,	Greenfield sandy loam	Slight	L	No Data	L	L
115	1.1	1.5	GsA,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M	L, M
115	1.5	1.6	GsA,RcA,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M, M	L, M, M
115	1.6	1.7	GsA,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M	L, M
115	1.7	1.8	GsA,GsC,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, L, M	L, M, M
115	1.8	1.9	GsA,GsC,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M, M	L, M, M
115	1.9	2.0	GsC,RcA,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M, M	L, M, M
115	2.0	2.1	GsC,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M	L, M
115	2.1	2.6	GsC	Greenfield sandy loam	Slight	L	No Data	L	L
115	2.6	2.7	GsC,RcC,	Greenfield sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M	L, M

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Soil Erodibility Potential	Sensitivity Rating	Linear Extensiblity Percent	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)
115	2.7	2.9	RcC,	Ramona coarse sandy loam	Slight	L	No Data	M	M
115	2.9	3.0	RcC,TsF,	Ramona coarse sandy loam, Terrace escarpments	Severe	H	No Data	M, No Data	M, No Data
115	3.0	3.1	HbC,RcC,TsF,	Hanford coarse sandy loam, Ramona coarse sandy loam, Terrace escarpments	Severe	H	No Data	L, M, No Data	L, M, No Data
115	3.1	3.2	HbC,RcC,RcD, TsF,	Hanford coarse sandy loam, Ramona coarse sandy loam, Terrace escarpments	Severe	H	No Data	L, M, M, No Data	L, M, M, No Data
115	3.2	3.3	HbC,RcD,TsF,	Hanford coarse sandy loam, Ramona coarse sandy loam, Terrace escarpments	Severe	H	No Data	L, M, No Data	L, M, No Data
115	3.3	3.5	HbC,TsF,	Hanford coarse sandy loam, Terrace escarpments	Severe	H	No Data	L, No Data	L, No Data
115	3.5	3.6	TsF,	Terrace escarpments	Severe	H	No Data	No Data	No Data
115	3.6	3.7	TsF,VsE2,	Terrace escarpments, Vista coarse sandy loam	Severe	H	No Data	No Data, L	No Data, lL
115	3.7	3.8	RcC,RcD,TsF, VsE2,	Ramona coarse sandy loam, Terrace escarpments, Vista coarse sandy loam	Severe	H	No Data	M, M, No Data, L	M, M, No Data, L
115	3.8	3.9	RcB,RcC,RcD, TsF,VsF2,	Ramona coarse sandy loam, Terrace escarpments, Vista coarse sandy loam	Severe	H	No Data	M, M, M, No Data, L	M, M, M, No Data, L
115	3.9	4.0	RcB,RcD,TsF, VsF2,	Ramona coarse sandy loam, Terrace escarpments, Vista coarse sandy loam	Severe	H	No Data	M, M, No Data, L	M, M, No Data, L
115	4.0	4.1	RcB,RcC,TsF, VsF2,	Ramona coarse sandy loam, Terrace escarpments, Vista coarse sandy loam	Severe	H	No Data	M, M, No Data, L	M, M, No Data, L
115	4.1	4.2	HbC,RcC,TsF, VsF2,	Hanford coarse sandy loam, Ramona coarse sandy loam, Terrace escarpments, Vista coarse sandy loam	Severe	H	No Data	L, M, No Data, L	L, M, No Data, L
115	4.2	4.3	HbC,VsF,VsF2,	Hanford coarse sandy loam, Vista coarse sandy loam	Severe	H	No Data	L, L, L	L, L, L
115	4.3	4.4	HbC,VsF,	Hanford coarse sandy loam, Vista coarse sandy loam	Severe	H	No Data	L, L	L, L
115	4.5	4.6	HbC,VsF,VsF2,	Hanford coarse sandy loam, Vista coarse sandy loam	Severe	H	No Data	L, L, L	L, L, L
115	4.6	4.7	HbC,VsE,	Hanford coarse sandy loam, Vista coarse sandy loam	Moderate	M	No Data	L, L	L, L
115	4.7	4.8	AmF2,HbC,Hd C,VsE,	Amargosa rocky coarse sandy loam, Hanford coarse sandy loam, Vista coarse sandy loam	Moderate	M	No Data	L, L, L, L	M, L, L, L
G	0.0	1.0	GsC	Greenfield sandy loam	Slight	L	No Data	L	L
G	1.0	1.1	GsC,GsD2,	Greenfield sandy loam	Slight	L	No Data	L, L	L, L
G	1.1	1.2	GsA,GsC2,GsD 2,	Greenfield sandy loam	Slight	L	No Data	L, L, L	L, L, L
G	1.2	1.3	GsA,GsC2,	Greenfield sandy loam	Slight	L	No Data	L, L	L, L

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TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Soil Erodibility Potential	Sensitivity Rating	Linear Extensiblity Percent	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)
G	1.3	1.4	GsA,HfA,	Greenfield sandy loam, Hanford loam	Slight	L	No Data	L, L	L, L
G	1.4	1.5	GsA,GsC,HfA,	Greenfield sandy loam, Hanford loam	Slight	L	No Data	L, L, L	L, L, L
G	1.5	1.7	GsC,HfA,TsF,	Greenfield sandy loam, Hanford loam , Terrace escarpments	Severe	H	No Data	L, L, No Data	L, L, No Data
G	1.7	1.9	GsC2,	Greenfield sandy loam	Slight	L	No Data	L	L
G	1.9	2.0	GsC2,GsD2,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, L, M	L, L, M
G	2.0	2.1	GsC,GsD2,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, L, M	L, L, M
G	2.1	2.2	GsC,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M	L, M
G	2.2	2.3	GsC	Greenfield sandy loam	Slight	L	No Data	L	L
G	2.3	2.5	GsC,RcC,	Greenfield sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M	L, M
G	2.5	3.2	RcC,	Ramona coarse sandy loam	Slight	L	No Data	M	M
G	3.2	3.4	GsC,RcC,	Greenfield sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M	L, M
G	3.4	3.5	GsC2,RcC,	Greenfield sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M	L, M
G	3.5	3.6	GsC2,RcC,TsF,	Greenfield sandy loam, Ramona coarse sandy loam, Terrace escarpments	Severe	H	No Data	L, M, No Data	L, M, No Data
G	3.6	3.7	GsC2,HbD,RcC,RcD,	Greenfield sandy loam, Hanford coarse sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, L, M, M	L, L, M, M
G	3.7	3.8	HbD,RcC,RcD,	Hanford coarse sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M, M	L, M, M
G	3.8	3.9	HbD,RcC,TsF,	Hanford coarse sandy loam, Ramona coarse sandy loam, Terrace escarpments	Severe	H	No Data	L, M, No Data	L, M, No Data
G	3.9	4.0	HbD,TsF,VsF2,	Hanford coarse sandy loam, Terrace escarpments, Vista coarse sandy loam	Severe	H	No Data	L, No Data, L	L, No Data, L
G	4.0	4.2	AmF2,HbD,VsF2,	Amargosa rocky coarse sandy loam, Hanford coarse sandy loam, Vista coarse sandy loam	Severe	H	No Data	L, L, L	M, L, L
G	4.2	4.3	AmF2,VsF2,	Amargosa rocky coarse sandy loam, Vista coarse sandy loam	Severe	H	No Data	L, L	M, L
G	4.3	4.6	AmF2,	Amargosa rocky coarse sandy loam	Moderate	M	No Data	L	M
G	4.6	4.8	AmF2,VsF2,	Amargosa rocky coarse sandy loam, Vista coarse sandy loam	Severe	H	No Data	L, L	M, L
G	4.8	4.9	VsF2,	Vista coarse sandy loam	Severe	H	No Data	L	L
G	4.9	5.1	RdE2,VsF2,	Ramona sandy loam, Vista coarse sandy loam	Severe	H	No Data	M, L	M, L

TABLE B-1 – USDA SOILS

Location			**Feature**						
Segment Corridor	**Mile From**	**Mile To**	**Soil MUSYM**	**Description**	**Soil Erodibility Potential**	**Sensitivity Rating**	**Linear Extensiblity Percent**	**Corrosive Soil Potential (Concrete)**	**Corrosive Soil Potential (Steel)**
G	5.1	5.2	RcC,RdE2,	Ramona coarse sandy loam, Ramona sandy loam	Moderate	M	No Data	M, M	M, M
G	5.2	5.3	HbC,RcC,RdE2,	Hanford coarse sandy loam, Ramona coarse sandy loam, Ramona sandy loam	Moderate	M	No Data	L, M, M	L, M, M
G	5.3	5.4	HbC,VsF2,	Hanford coarse sandy loam, Vista coarse sandy loam	Severe	H	No Data	L, L	L, L
G	5.4	5.5	Co,HbC,VsF2,	Chino loam, Hanford coarse sandy loam, Vista coarse sandy loam	Severe	H	No Data	L, L, L	H, L, L
G	5.5	5.6	Co,YoC,	Chino Loam, Yolo loam	Slight	L	No Data	L, L	H, L
G	5.6	5.7	Co,MhF2,YoC,	Chino Loam, Millsholm rocky loam, Yolo loam	Severe	H	No Data	L, L, L	H, L, L
G	5.7	5.9	MhF2,YoC,	Millsholm rocky loam, Yolo loam	Severe	H	No Data	L, L	L, L
G	5.9	6.0	HcC,MhF2,YoC,	Hanford sandy loam, Millsholm rocky loam, Yolo loam	Severe	H	No Data	L, L, L	L, L, L
G	6.0	6.1	AmF2,HcC,MhF2,VsE2,YoC,	Amargosa rocky coarse sandy loam, Hanford sandy loam, Millsholm rocky loam, Vista coarse sandy loam, Yolo loam	Severe	H	No Data	L, L, L, L, L	M, L, L, L, L
G	6.1	6.2	AmF2,HcC,HdC,VsE2,	Amargosa rocky coarse sandy loam, Hanford sandy loam, Hanford gravelly sandy loam, Vista coarse sandy loam	Moderate	M	No Data	L, L, L, L	M, L, L, L
G	6.2	6.4	AmF2,	Amargosa rocky coarse sandy loam	Moderate	M	No Data	L	M
G	6.4	6.5	46,AmF2,	Caperton-San Andreas-Modesto families complex, Amargosa rocky coarse sandy loam	Severe	H	No Data	No Data, L	No Data, M
G	6.5	6.8	46,	Caperton-San Andreas-Modesto families complex	Severe	H	No Data	No Data	No Data
G	6.8	7.2	36,46,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Caperton-San Andreas-Modesto families complex	Very Severe	H	No Data	No Data	No Data
G	7.2	7.4	36,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	Very Severe	H	No Data	No Data	No Data
G	7.4	7.5	36,39,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Tujunga-Capistrano families association	Very Severe	H	No Data	No Data	No Data
G	7.5	7.6	36,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	Very Severe	H	No Data	No Data	No Data
G	7.6	7.8	36,39,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Tujunga-Capistrano families association	Very Severe	H	No Data	No Data	No Data

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	**Mile From**	**Mile To**	**Soil MUSYM**	**Description**	**Soil Erodibility Potential**	**Sensitivity Rating**	**Linear Extensiblity Percent**	**Corrosive Soil Potential (Concrete)**	**Corrosive Soil Potential (Steel)**
G	7.8	7.9	39,	Tujunga-Capistrano families association	Slight	L	No Data	No Data	No Data
G	7.9	8.1	36,39,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Tujunga-Capistrano families association	Very Severe	H	No Data	No Data	No Data
G	8.1	8.8	39,	Tujunga-Capistrano families association	Slight	L	No Data	No Data	No Data
G	8.8	9.0	36,39,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Tujunga-Capistrano families association	Very Severe	H	No Data	No Data	No Data
G	9.0	9.3	36,	Tujunga-Capistrano families association	Very Severe	H	No Data	No Data	No Data
G	9.3	10.4	36,39,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Tujunga-Capistrano families association	Very Severe	H	No Data	No Data	No Data
G	10.4	10.6	39,	Tujunga-Capistrano families association	Slight	L	No Data	No Data	No Data
G	10.6	10.8	36,39,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Tujunga-Capistrano families association	Very Severe	H	No Data	No Data	No Data
G	10.8	10.9	36,46,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Caperton-San Andreas-Modesto families complex	Very Severe	H	No Data	No Data	No Data
G	10.9	11.3	46,	Caperton-San Andreas-Modesto families complex	Severe	H	No Data	No Data	No Data
G	11.3	11.4	36,46,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Caperton-San Andreas-Modesto families complex	Very Severe	H	No Data	No Data	No Data
G	11.4	12.3	36,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	Very Severe	H	No Data	No Data	No Data
G	12.3	12.4	35,36,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	Very Severe	H	No Data	No Data	No Data
G	12.4	12.5	35,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	Severe	H	No Data	No Data	No Data
G	12.5	12.6	26,35,	Stonyford-Millsholm families complex, Trigo granitic substratum-Exchequer families-Rock outcrop complex	Severe	H	No Data	No Data	No Data
G	12.6	13.9	26,	Stonyford-Millsholm families complex	Severe	H	No Data	No Data	No Data

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	**Mile From**	**Mile To**	**Soil MUSYM**	**Description**	**Soil Erodibility Potential**	**Sensitivity Rating**	**Linear Extensiblity Percent**	**Corrosive Soil Potential (Concrete)**	**Corrosive Soil Potential (Steel)**
G	13.9	14.0	26,8,	Stonyford-Millsholm families complex, Lodo-Modesto families complex	Severe	H	No Data	No Data	No Data
G	14.0	19.2	8,	Lodo-Modesto families complex	Severe	H	No Data	No Data	No Data
G	19.2	19.4	15,8,	Calciserollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex, Lodo-Modesto families complex	Severe	H	No Data	No Data	No Data
G	19.4	19.5	15,	Calciserollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	Severe	H	No Data	No Data	No Data
G	19.5	19.8	12,15,	Mollic Haploxeralfs, Calciserollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	Severe	H	No Data	No Data	No Data
G	19.8	20.9	12,	Mollic Haploxeralfs	Moderate	M	No Data	No Data	No Data
G	20.9	21.1	12,15,	Mollic Haploxeralfs, Calciserollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	Severe	H	No Data	No Data	No Data
G	21.1	21.2	15,	Calciserollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	Severe	H	No Data	No Data	No Data
GV	0.0	0.7	AmF2	Amargosa rocky coarse sandy loam	Moderate	M	No Data	L	M
GV	0.7	0.9	46, AmF2	Caperton-San Andreas-Modesto families complex, Amargosa rocky coarse sandy loam	Severe	H	No Data	No Data, L	No Data, M
GV	0.9	1.1	46	Caperton-San Andreas-Modesto families complex	Severe	H	No Data	No Data	No Data
GV	1.1	1.2	46, 7	Caperton-San Andreas-Modesto families complex; Hanford family	Severe	H	No Data	No Data	No Data
GV	1.2	1.8	46	Caperton-San Andreas-Modesto families complex	Severe	H	No Data	No Data	No Data
GV	1.8	2.1	35, 46	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Caperton-San Andreas-Modesto families complex	Severe	H	No Data	No Data	No Data
GV	2.1	2.2	35, 36, 46	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Tujunga-Capistrano families association; Caperton-San Andreas-Modesto families complex	Very Severe	H	No Data	No Data	No Data

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	**Mile From**	**Mile To**	**Soil MUSYM**	**Description**	**Soil Erodibility Potential**	**Sensitivity Rating**	**Linear Extensiblity Percent**	**Corrosive Soil Potential (Concrete)**	**Corrosive Soil Potential (Steel)**
GV	2.2	2.4	36, 46	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Caperton-San Andreas-Modesto families complex	Very Severe	H	No Data	No Data	No Data
GV	2.4	2.5	46	Caperton-San Andreas-Modesto families complex	Severe	H	No Data	No Data	No Data
GV	2.5	2.6	36, 46	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Caperton-San Andreas-Modesto families complex	Very Severe	H	No Data	No Data	No Data
GV	2.6	2.7	35, 36, 46	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Tujunga-Capistrano families association Caperton-San Andreas-Modesto families complex	Very Severe	H	No Data	No Data	No Data
GV	2.7	3.0	35	Trigo granitic substratum-Exchequer families-Rock outcrop complex	Severe	H	No Data	No Data	No Data
GV	3.0	3.6	35, 36	Trigo granitic substratum-Exchequer families-Rock outcrop complex	Very Severe	H	No Data	No Data	No Data
GV	5.8	6.0	36, 46	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Caperton-San Andreas-Modesto families complex	Very Severe	H	No Data	No Data	No Data
GV	6.0	6.5	46	Caperton-San Andreas-Modesto families complex	Severe	H	No Data	No Data	No Data
H1	0.0	0.1	GsC	Greenfield sandy loam	Slight	L	No Data	L	L
H1	0.1	0.4	GsC,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M	L, M
H1	0.4	0.8	GsC	Greenfield sandy loam	Slight	L	No Data	L	L
H1	0.8	1.1	GsC,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M	L, M
H1	1.1	1.4	RcB,	Ramona coarse sandy loam	Slight	L	No Data	M	M
H1	1.4	1.6	GsC,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M	L, M
H1	1.6	1.7	GsC		Slight	L	No Data	L	L
H1	1.7	1.9	GsC,RcC,	Greenfield sandy loam, Ramona coarse sandy loam	Slight	L	No Data	L, M	L, M
H1	1.9	2.0	GsC,RcC,TsF,	Greenfield sandy loam, Ramona coarse sandy loam, Terrace escarpments	Severe	H	No Data	L, M, No Data	L, M, No Data
H1	2.0	2.1	RcC,TsF,	Ramona coarse sandy loam, Terrace escarpments	Severe	H	No Data	M, No Data	M, No Data
H1	2.1	2.3	HbC,RcC,VsF2 ,	Hanford coarse sandy loam, Ramona coarse sandy loam, Vista coarse sandy loam	Severe	H	No Data	L, M, L	L, M, L
H1	2.3	2.5	VsF2,	Vista coarse sandy loam	Severe	H	No Data	L	L

TABLE B-1 – USDA SOILS

Location			Feature							
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Soil Erodibility Potential	Sensitivity Rating	Linear Extensiblity Percent	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)
H1	2.5	2.6	HbC,VsE,VsF2,	Hanford coarse sandy loam, Vista coarse sandy loam	Severe	H	No Data	L, L, L	L, L, L
H1	2.6	2.7	AmF2,HbC,HdC,VsE,	Amargosa rocky coarse sandy loam, Hanford coarse sandy loam, Hanford gravelly sandy loam, Vista coarse sandy loam	Moderate	M	No Data	L, L, L, L	M, L, L, L
H2	0.0	0.3	AmF2,HdC,	Amargosa rocky coarse sandy loam, Hanford gravelly sandy loam	Moderate	M	No Data	L, L	M, L
H2	0.3	0.4	AmF2,VsE2,	Amargosa rocky coarse sandy loam, Vista coarse sandy loam	Moderate	M	No Data	L, L	M, L
H2	0.4	0.5	AmF2,VsE2,VsF,	Amargosa rocky coarse sandy loam, Vista coarse sandy loam	Severe	H	No Data	L, L	M, L
H2	0.5	0.6	VsF,	Vista coarse sandy loam	Severe	H	No Data	L	L
H2	0.6	0.8	HbC,VsF,VsF2,	Hanford coarse sandy loam, Vista coarse sandy loam	Severe	H	No Data	L, L, L	L, L, L
H2	0.8	1.0	GsC,HbC,VsF2,	Greenfield sandy loam, Hanford coarse sandy loam, Vista coarse sandy loam	Severe	H	No Data	L, L, L	L, L, L
H2	1.0	1.1	Co,GsC,HbC,	Chino loam, Greenfield sandy loam, Hanford coarse sandy loam	Slight	L	No Data	L, L, L	H, L, L
H2	1.1	1.2	GaE2,GsC,MhE2,	Gaviota rocky sandy loam, Greenfield sandy loam, Millsholm rocky loam	Moderate	M	No Data	L, L, L	L, L, L
H2	1.2	1.3	GaE2,MhE2,	Gaviota rocky sandy loam, Millsholm rocky loam	Moderate	M	No Data	L, L	L, L
H2	1.3	1.4	CmF2,MhE2,	Castaic-Balcom silty clay loams, Millsholm rocky loam	Severe	H	No Data	L, L	H, L
H2	1.4	1.5	CmF2,MhE2,RdE2,YoC,	Castaic-Balcom silty clay loams, Millsholm rocky loam, Ramona sandy loam, Yolo loam	Severe	H	No Data	L, L, M, L	H, L, M, L
H2	1.5	1.6	HbC,RdE2,YoC,	Hanford coarse sandy loam, Ramona sandy loam, Yolo loam	Moderate	M	No Data	L, M, L	L, M, L
H2	1.6	1.7	Co,HbC,YoC,	Chino loam, Hanford coarse sandy loam, Yolo loam	Slight	L	No Data	L, L, L	H, L, L
H2	1.7	1.8	Co,GsC,	Chino loam, Greenfield sandy loam	Slight	L	No Data	L, L	H, L
H2	1.8	1.9	AmF2,GsC,	Amargosa rocky coarse sandy loam, Greenfield sandy loam	Moderate	M	No Data	L, L	M, L
H2	1.9	2.5	AmF2,	Amargosa rocky coarse sandy loam	Moderate	M	No Data	L	M
H2	2.5	2.6	35,AmF2,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Amargosa rocky coarse sandy loam	Severe	H	No Data	No Data, L	No Data, M
H2	2.6	3.7	35,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	Severe	H	No Data	No Data	No Data

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	**Mile From**	**Mile To**	**Soil MUSYM**	**Description**	**Soil Erodibility Potential**	**Sensitivity Rating**	**Linear Extensiblity Percent**	**Corrosive Soil Potential (Concrete)**	**Corrosive Soil Potential (Steel)**
H2	3.7	3.8	35,36,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	Very Severe	H	No Data	No Data	No Data
H2	3.8	4.5	36,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	Very Severe	H	No Data	No Data	No Data
H2	4.5	4.7	35,36,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	Very Severe	H	No Data	No Data	No Data
H2	4.7	5.1	35,	Trigo granitic substratum-Exchequer families-Rock outcrop complex	Severe	H	No Data	No Data	No Data
H2	5.1	5.2	35,37,	Trigo granitic substratum-Exchequer families-Rock outcrop complex, Lodo-Tujunga families association	Severe	H	No Data	No Data	No Data
H2	5.2	5.3	37,	Lodo-Tujunga families complex	Moderate	M	No Data	No Data	No Data
H2	5.3	5.4	37,8,	Lodo-Tujunga families complex, Lodo-Modesto families complex	Severe	H	No Data	No Data	No Data
H2	5.4	12.8	8,	Lodo-Modesto families complex	Severe	H	No Data	No Data	No Data
H2	12.8	12.9	1,8,	Exchequer family, Lodo-Modesto families complex	Severe	H	No Data	No Data	No Data
H2	12.9	14.4	1,	Exchequer family	Severe	H	No Data	No Data	No Data
H2	14.4	14.5	1,8,	Exchequer family, Lodo-Modesto families complex	Severe	H	No Data	No Data	No Data
H2	14.5	15.2	8,	Lodo-Modesto families complex	Severe	H	No Data	No Data	No Data
H2	15.2	15.5	15,8,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex, Lodo-Modesto families complex	Severe	H	No Data	No Data	No Data
H2	15.5	15.6	15,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	Severe	H	No Data	No Data	No Data
H2	15.6	15.8	15,7,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex, Hanford family	Severe	H	No Data	No Data	No Data
H2	15.8	16.1	15,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	Severe	H	No Data	No Data	No Data
H2	16.1	16.3	15,7,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex, Hanford family	Severe	H	No Data	No Data	No Data

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TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Soil Erodibility Potential	Sensitivity Rating	Linear Extensiblity Percent	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)
H2	16.3	16.6	15,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	Severe	H	No Data	No Data	No Data
H2	16.6	16.8	15,7,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex, Hanford family	Severe	H	No Data	No Data	No Data
H2	16.8	17.1	15,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	Severe	H	No Data	No Data	No Data
I	0.0	1.4	GsC	Greenfield sandy loam	Slight	L	No Data	L	L
I	1.4	1.8	GsC,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	Slight	L	No Data	L, L	L, L
I	1.8	1.9	GsC	Greenfield sandy loam	Slight	L	No Data	L	L
I	1.9	2.0	GsC,HbC,HcC,	Greenfield sandy loam, Hanford coarse sandy loam, Hanford sandy loam	Slight	L	No Data	L, L, L	L, L, L
I	2.0	2.3	HbC,	Hanford coarse sandy loam	Slight	L	No Data	L	L
I	2.3	2.4	GsC,HbC,	Greenfield sandy loam	Slight	L	No Data	L	L
I	2.4	2.5	GsC	Greenfield sandy loam	Slight	L	No Data	L	L
I	2.5	2.6	GsC,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	Slight	L	No Data	L, L	L, L
I	2.6	2.8	HbC,	Hanford coarse sandy loam	Slight	L	No Data	L	L
I	2.8	3.1	GsC2,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	Slight	L	No Data	L, L	L, L
I	3.1	3.3	HbC,	Hanford coarse sandy loam	Slight	L	No Data	L	L
I	3.3	3.5	HbC,HbD,	Hanford coarse sandy loam, Handford coarse sandy loam	Slight	L	No Data	L, L	L, L
I	3.5	3.6	GsC,HbC,HbD,	Greenfield sandy loam, Hanford coarse sandy loam, Handford coarse sandy loam	Slight	L	No Data	L, L, L	L, L, L
I	3.6	3.7	GsC,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	Slight	L	No Data	L, L	L, L
I	3.7	3.8	HbC,HbD,	Hanford coarse sandy loam, Handford coarse sandy loam	Slight	L	No Data	L, L	L, L
I	3.8	4.2	HbD,	Hanford coarse sandy loam	Slight	L	No Data	L	L
I	4.2	4.4	GsC,HbD,	Greenfield sandy loam, Hanford coarse sandy loam	Slight	L	No Data	L, L	L, L
I	4.4	4.6	HbD,TsF,	Hanford coarse sandy loam, Terrace escarpments	Severe	H	No Data	L, No Data	L, No Data
I	4.6	4.8	HbD,TsF,VsF2,	Hanford coarse sandy loam, Terrace escarpments, Vista coarse sandy loam	Severe	H	No Data	L, No Data, L	L, No Data, L
I	4.8	4.9	HbD,VsF2,	Hanford coarse sandy loam, Vista coarse sandy loam	Severe	H	No Data	L, L	L, L
I	4.9	5.6	VsF2,	Vista coarse sandy loam	Severe	H	No Data	L	L
I	5.6	5.8	VsF,VsF2,	Vista coarse sandy loam	Severe	H	No Data	L, L	L, L
I	5.8	6.6	VsF,	Vista coarse sandy loam	Severe	H	No Data	L	L

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	**Mile From**	**Mile To**	**Soil MUSYM**	**Description**	**Soil Erodibility Potential**	**Sensitivity Rating**	**Linear Extensiblity Percent**	**Corrosive Soil Potential (Concrete)**	**Corrosive Soil Potential (Steel)**
I	6.6	6.7	HcC,VsF,	Hanford sandy loam, Vista coarse sandy loam	Severe	H	No Data	L, L	L, L
I	6.7	6.8	AmF2,HcC,VsF,	Amargosa rocky coarse sandy loam, Hanford sandy loam, Vista coarse sandy loam	Severe	H	No Data	L, L, L	M, L, L
I	6.8	7.0	AmF2,	Amargosa rocky coarse sandy loam	Moderate	M	No Data	L	M
I	7.0	7.2	AmF2,GdF,	Amargosa rocky coarse sandy loam, Godde rocky loam	Severe	H	No Data	L, M	M, M
I	7.2	7.5	GdF,	Godde rocky loam	Severe	H	No Data	M	M
I	7.5	8.0	GdF,HbC,	Godde rocky loam, Hanford coarse sandy loam	Severe	H	No Data	M, L	M, L
I	8.0	8.3	GcE,HbC,	Godde loam, Hanford coarse sandy loam	Moderate	M	No Data	M, L	M, L
I	8.3	8.7	GcE,	Godde loam	Moderate	M	No Data	M	M
I	8.7	8.8	GcE,GdF,	Godde loam, Godde rocky loam	Severe	H	No Data	M, M	M, M
I	8.8	8.9	GcE,GdF,WgD,	Godde loam, Godde rocky loam, Wyman gravelly loam	Severe	H	No Data	M, M, L	M, M, L
I	8.9	9.2	GcE,WgD,	Godde loam, Wyman gravelly loam	Moderate	M	No Data	M, L	M, L
I	9.2	9.9	GcE,HbC,	Godde loam, Hanford coarse sandy loam	Moderate	M	No Data	M, L	M, L
I	9.9	10.1	GcE,HbC,HcC,	Godde loam, Hanford coarse sandy loam, Hanford sandy loam	Moderate	M	No Data	M, L, L	M, L, L
I	10.1	10.3	HbC,HcC,	Hanford coarse sandy loam, Hanford sandy loam	Slight	L	No Data	L, L	L, L
I	10.3	10.5	GcE,HbC,	Godde loam, Hanford coarse sandy loam	Moderate	M	No Data	M, L	M, L
I	10.5	10.6	ApF,GcE,HbC,	Anaverde rocky loam, Godde loam, Hanford coarse sandy loam	Severe	H	No Data	L, M, L	M, M, L
I	10.6	10.7	ApF,	Anaverde rocky loam	Severe	H	No Data	L	M
I	10.7	10.8	ApF,GdF,	Anaverde rocky loam, Godde rocky loam	Severe	H	No Data	L, M	M, M
I	10.8	12.1	ApF,	Anaverde rocky loam	Severe	H	No Data	L	M
I	12.1	12.5	ApF,GdF,	Anaverde rocky loam, Godde rocky loam	Severe	H	No Data	L, M	M, M
I	12.5	12.6	ApF,	Anaverde rocky loam	Severe	H	No Data	L	M
I	12.6	12.7	ApF,GdF,	Anaverde rocky loam, Godde rocky loam	Severe	H	No Data	L, M	M, M
I	12.7	13.7	GdF,	Godde rocky loam	Severe	H	No Data	M	M
I	13.7	13.8	AnE,ApF,GdF,	Anaverde loam, Anaverde rocky loam, Godde rocky loam	Severe	H	No Data	L, L, M	M, M, M
I	13.8	13.9	AnE,GdF,	Anaverde loam, Godde rocky loam	Severe	H	No Data	L, M	M, M
I	13.9	14.7	GdF,	Godde rocky loam	Severe	H	No Data	M	M
I	14.7	15.1	CzC,GdF,	Cortina cobbly sandy loam, Godde rocky loam	Severe	H	No Data	M, M	M, M
I	15.1	15.5	GdF,	Godde rocky loam	Severe	H	No Data	M	M
I	15.5	15.6	GdF,WoC,	Godde rocky loam, Wyman cobbly loam	Severe	H	No Data	M, L	M, L

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TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	**Mile From**	**Mile To**	**Soil MUSYM**	**Description**	**Soil Erodibility Potential**	**Sensitivity Rating**	**Linear Extensiblity Percent**	**Corrosive Soil Potential (Concrete)**	**Corrosive Soil Potential (Steel)**
I	15.6	15.7	GdF,	Godde rocky loam	Severe	H	No Data	M	M
I	15.7	15.9	GdF,WoC,	Godde rocky loam, Wyman cobbly loam	Severe	H	No Data	M, L	M, L
I	15.9	16.0	GdF,TsF,WgC, WoC,	Godde rocky loam, Terrace escarpments, Wyman gravelly loam, Wyman cobbly loam	Severe	H	No Data	M, No Data, L, L	M, No Data, L, L
I	16.0	16.1	GdF,WgD,WoC ,	Godde rocky loam,Wyman gravelly loam, Wyman cobbly loam	Severe	H	No Data	M, L, L	M, L, L
I	16.1	16.3	GdF,WgD,	Godde rocky loam,Wyman gravelly loam	Severe	H	No Data	M, L	M, L
I	16.3	16.5	GdF,	Godde rocky loam	Severe	H	No Data	M	M
I	16.5	16.6	8,GdF,	Lodo-modesto families complex, Godde rocky loam	Severe	H	No Data	No Data, M	No Data, M
I	16.6	16.7	1,8,GdF,	Exchequer family, Lodo-modesto families complex, Godde rocky loam	Severe	H	No Data	No Data, No Data, M	No Data, No Data, M
I	16.7	16.9	1,8,	Exchequer family, Lodo-modesto families complex	Severe	H	No Data	No Data	No Data
I	16.9	17.0	1,6,8,	Exchequer family, Typic haploxeralfs, Lodo-modesto families complex	Severe	H	No Data	No Data	No Data
I	17.0	17.1	1,6,	Exchequer family, Typic haploxeralfs	Severe	H	No Data	No Data	No Data
I	17.1	17.6	1,	Exchequer family	Severe	H	No Data	No Data	No Data
I	17.6	18.0	1,6,	Exchequer family, Typic haploxeralfs	Severe	H	No Data	No Data	No Data
I	18.0	18.1	1,6,8,	Exchequer family, Typic haploxeralfs, Lodo-modesto families complex	Severe	H	No Data	No Data	No Data
I	18.1	18.2	6,8,WgC,	Typic haploxeralfs, Lodo-modesto families complex, Wyman gravelly loam	Severe	H	No Data	No Data, No Data, L	No Data, No Data, L
I	18.2	18.3	6,AmF2,WgC,	Typic haploxeralfs, Amargosa rocky coarse sandy loam, Wyman gravelly loam	Moderate	M	No Data	No Data, L, L	No Data, M, L
I	18.3	18.4	AmF2,TsF,Wg C,	Amargosa rocky coarse sandy loam, Terrace escarpments, Wyman gravelly loam	Severe	H	No Data	L, No Data, L	M, No Data, L
I	18.4	18.5	AmF2,TsF,VsE ,	Amargosa rocky coarse sandy loam, Terrace escarpments, Vista coarse sandy loam	Severe	H	No Data	L, No Data, L	M, No Data, L
I	18.5	18.0	AmF2,VsE,	Amargosa rocky coarse sandy loam, Vista coarse sandy loam	Moderate	M	No Data	L, L	M, L
I	18.7	19.2	AmF2,	Amargosa rocky coarse sandy loam	Moderate	M	No Data	L	M
I	19.2	19.5	AmF2,GsC,	Amargosa rocky coarse sandy loam, Greenfield sandy loam	Moderate	M	No Data	L, L	M, L

TABLE B-1 – USDA SOILS

Location			**Feature**						
Segment Corridor	**Mile From**	**Mile To**	**Soil MUSYM**	**Description**	**Soil Erodibility Potential**	**Sensitivity Rating**	**Linear Extensiblity Percent**	**Corrosive Soil Potential (Concrete)**	**Corrosive Soil Potential (Steel)**
I	19.5	23.0	AmF2,	Amargosa rocky coarse sandy loam	Moderate	M	No Data	L	M
I	23.0	23.1	AmF2,HcA,	Amargosa rocky coarse sandy loam, Hanford sandy loam	Moderate	M	No Data	L, L	M, L
I	23.1	23.2	1,AmF2,HcA,	Exchequer family, Amargosa rocky coarse sandy loam, Hanford sandy loam	Severe	H	No Data	No Data, L, L	No Data, M, L
I	23.2	23.3	1,7,AmF2,HcA,	Exchequer family, Hanford family, Amargosa rocky coarse sandy loam, Hanford sandy loam	Severe	H	No Data	No Data, No Data, L, L	No Data, No Data, M, L
I	23.3	23.8	1,	Exchequer family	Severe	H	No Data	No Data	No Data
I	23.8	24.3	1,AmF2,	Exchequer family, Amargosa rocky coarse sandy loam	Severe	H	No Data	No Data, L	No Data, M
I	24.3	24.4	1,AmF2,CmF2,	Exchequer family, Amargosa rocky coarse sandy loam, Castaic-Balcom silty clay loams	Severe	H	No Data	No Data, L, L	No Data, M, H
I	24.4	24.5	1,15,AmF2,CmF2,	Exchequer family, Calcixerollic xerochrepts-Calleguas family-Modesto family, moderately deep complex, Amargosa rocky coarse sandy loam, Castaic-Balcom silty clay loams	Severe	H	No Data	No Data, No Data, L, L	No Data, No Data, M, H
I	24.5	24.6	15,CmF2,	Calcixerollic xerochrepts-Calleguas family-Modesto family, moderately deep complex, Castaic-Balcom silty clay loams	Severe	H	No Data	No Data, L	No Data, H
I	24.6	25.5	CmF2,	Castaic-Balcom silty clay loams	Severe	H	No Data	L	H
I	25.5	26.4	CmF2,HcC,	Castaic-Balcom silty clay loams, Hanford sandy loam	Severe	H	No Data	L, L	H, L
I	26.4	27.0	CmF2,	Castaic-Balcom silty clay loams	Severe	H	No Data	L	H
I	27.0	27.3	CmF2,CnG3,	Castaic-Balcom silty clay loams, Castaic and Saugus soils	Severe	H	No Data	L, L	H, H
I	27.3	27.6	CmF2,CzC,	Castaic-Balcom silty clay loams, Cortina cobbly sandy loam	Severe	H	No Data	L, M	H, M
I	27.6	27.7	CzC,	Cortina cobbly sandy loam	Slight	L	No Data	M	M
I	27.7	27.8	CmF2,CzC,	Castaic-Balcom silty clay loams, Cortina cobbly sandy loam	Severe	H	No Data	L, M	H, M
I	27.8	27.9	CmF2,CyC,CzC,	Castaic-Balcom silty clay loams, Cortina sandy loam, Cortina cobbly sandy loam	Severe	H	No Data	L, M, M	H, M, M
I	27.9	28.0	CyC,CzC,	Cortina sandy loam, Cortina cobbly sandy loam	Slight	L	No Data	M, M	M, M
I	28.0	28.3	CyC,HcC,	Cortina sandy loam, Hanford sandy loam	Slight	L	No Data	M, L	M, L
I	28.3	28.4	CyC,HcC,MfA,	Cortina sandy loam, Hanford sandy loam, Metz loamy sand	Slight	L	No Data	M, L, L	M, L, H
I	28.4	28.5	HcC,MfA,MpC,	Hanford sandy loam, Metz loamy sand, Mocho loam	Slight	L	No Data	L, L, L	L, H, H

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	**Mile From**	**Mile To**	**Soil MUSYM**	**Description**	**Soil Erodibility Potential**	**Sensitivity Rating**	**Linear Extensiblity Percent**	**Corrosive Soil Potential (Concrete)**	**Corrosive Soil Potential (Steel)**
I	28.5	28.6	MfA,MpC,OgF,	Metz loamy sand, Mocho loam, Ojai loam	Severe	H	No Data	L, L, L	H, H, M
I	28.6	28.7	OgF,ZaC,	Ojai loam, Zamora loam	Severe	H	No Data	L, L	H, H
I	28.7	28.8	MpC,OgF,ZaC,	Mocho loam, Ojai loam, Zamora loam	Severe	H	No Data	L, L, L	H, H, H
I	28.8	28.9	CmF2,MpC,OgF,	Castaic-Balcom silty clay loams, Mocho loam, Ojai loam	Severe	H	No Data	L, L, L	H, H, H
I	28.9	29.0	CmF2,	Castaic-Balcom silty clay loams	Severe	H	No Data	L	H
I	29.0	29.3	CmF2,MpC,	Castaic-Balcom silty clay loams, Mocho loam	Severe	H	No Data	L, L	H, H
I	29.3	29.4	CmF2,MpC,ScF2,	Castaic-Balcom silty clay loams, Mocho loam, Saugus loam	Severe	H	No Data	L, L, L	H, H. L
I	29.4	29.5	MpC,ScF2,	Mocho loam, Saugus loam	Severe	H	No Data	L, L	H, L
I	29.5	30.4	ScF2,	Saugus loam	Severe	H	No Data	L	L
I	30.4	30.5	ScF2,YoC,	Saugus loam, Yolo loam	Severe	H	No Data	L, L	L, L
I	30.5	30.7	ScF2,	Saugus loam	Severe	H	No Data	L	L
I	30.7	30.8	CyC,ScF2,YoC,	Cortina sandy loam, Saugus loam, Yolo loam	Severe	H	No Data	M, L, L	M, L, L
I	30.8	30.9	CyC,HcC,ScF2, YoC,	Cortina sandy loam, Hanford sandy loam, Saugus loam, Yolo loam	Severe	H	No Data	M, L, L, L	M, L, L, L
I	30.9	31.0	HcC,ScF2,SsB, YoC,	Hanford sandy loam, Saugus loam, Sorrento loam, Yolo loam	Severe	H	No Data	L, L, L, L	L, L, H, L
I	31.0	31.1	CmF2,HcC,ScF2,SsB,	Castaic-Balcom silty clay loams, Hanford sandy loam, Saugus loam, Sorrento loam	Severe	H	No Data	L, L, L, L	H, L, L, H
I	31.1	31.3	HcC,ScF2,SsB,	Hanford sandy loam, Saugus loam, Sorrento loam	Severe	H	No Data	L, L, H	L, L, H
I	31.3	31.4	15,7,HcC,ScF2,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex, Hanford family, Hanford sandy loam, Saugus loam	Severe	H	No Data	No Data, No Data, L, L	No Data, No Data, L, L
I	31.4	31.5	15,19,7,HcC,ScF2,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex, Trigo family-Calcixerollic Xerochrepts-Vista family complex, Hanford family, Hanford sandy loam, Saugus loam	Severe	H	No Data	No Data, No Data, No Data, L, L	No Data, No Data, No Data, L, L
I	31.5	31.6	15,19,7,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex, Trigo family-Calcixerollic Xerochrepts-Vista family complex, Hanford family	Severe	H	No Data	No Data	No Data

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	**Mile From**	**Mile To**	**Soil MUSYM**	**Description**	**Soil Erodibility Potential**	**Sensitivity Rating**	**Linear Extensiblity Percent**	**Corrosive Soil Potential (Concrete)**	**Corrosive Soil Potential (Steel)**
I	31.6	31.9	15,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	Severe	H	No Data	No Data	No Data
J	0.0	0.1	15	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	Severe	H	No Data	No Data	No Data
J	0.1	0.3	12,15	Mollic Haploxeralfs, Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	Severe	H	No Data	No Data	No Data
J	0.3	0.8	12	Mollic Haploxeralfs	Moderate	M	No Data	No Data	No Data
J	0.8	0.9	12,15	Mollic Haploxeralfs, Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	Severe	H	No Data	No Data	No Data
J	0.9	1.6	15	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	Severe	H	No Data	No Data	No Data
J	1.6	1.7	15,CmF2	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	Severe	H	No Data	No Data, L	No Data, H
J	1.7	1.8	CmF2,HcC,ScE,ZaC	Castaic-Balcom silty clay loams, Hanford sandy loam, Saugus loam, Zamora loam	Severe	H	No Data	L, L, L, L	H, L, L, H
J	1.8	1.9	MfC,ScE,ScF2, ZaC	Metz loamy sand, Saugus loam, Zamora loam	Severe	H	No Data	L, L, L, L	H, L, L, H
J	1.9	2.0	MfC,Sa	Metz loamy sand, Sandy alluvial land	Slight	L	No Data	L, L	H, H
J	2.0	2.1	HcC,Sa,ScF2	Hanford sandy loam, Sandy Alluvial land, Saugus loam	Severe	H	No Data	L, L, L	L, H, L
J	2.1	2.2	ScF2	Saugus loam	Severe	H	No Data	L	L
J	2.2	2.4	CnG3,ScF2	Castaic and Saugus soils, Saugus loam	Severe	H	No Data	L, L	H, L
J	2.4	2.6	CmF,CnG3,ScF2	Castaic-Balcom silty clay loams, Castaic and Saugus soils, Saugus loam	Severe	H	No Data	L, L, L	H, H, L
J	2.6	2.7	CmF,ScE,ScF2	Castaic-Balcom silty clay loams, Saugus loam	Severe	H	No Data	L, L, L	H, L, L
J	2.7	2.8	ScE,ScF2	Saugus loam	Severe	H	No Data	L, L	L, L
J	2.8	2.9	ScE	Saugus loam	Moderate	M	No Data	L	L
J	2.9	3.0	12,CnG3,ScE	Mollic Haploxeralfs, Castaic and Saugus soils, Saugus loam	Severe	H	No Data	No Data, L, L	No Data, H, L
J	3.0	3.1	12,ScE	Mollic Haploxeralfs, Saugus loam	Moderate	M	No Data	No Data, L	No Data L
J	3.1	3.2	12	Mollic Haploxeralfs	Moderate	M	No Data	No Data	No Data
J	3.2	3.4	12,26	Mollic Haploxeralfs, Stonyford-Millsholm families complex	Severe	H	No Data	No Data	No Data
J	3.4	3.6	26,7	Stonyford-Millsholm families complex, Hanford family	Severe	H	No Data	No Data	No Data

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TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	**Mile From**	**Mile To**	**Soil MUSYM**	**Description**	**Soil Erodibility Potential**	**Sensitivity Rating**	**Linear Extensiblity Percent**	**Corrosive Soil Potential (Concrete)**	**Corrosive Soil Potential (Steel)**
J	3.6	4.3	26	Stonyford-Millsholm families complex	Severe	H	No Data	No Data	No Data
J	4.3	4.5	26,7	Stonyford-Millsholm families complex, Hanford family	Severe	H	No Data	No Data	No Data
J	4.5	4.9	26	Stonyford-Millsholm families complex	Severe	H	No Data	No Data	No Data
J	4.9	5.0	26,CmF2	Stonyford-Millsholm families complex, Castaic-Balcom silty caly loams	Severe	H	No Data	No Data, L	No Data, H
J	5.0	5.1	26,CmF2,MhE2	Stonyford-Millsholm families complex, Castaic-Balcom silty caly loams, Millsholm rocky loam	Severe	H	No Data	No Data, L, L	No Data, H, L
J	5.1	5.2	MhE2	Millsholm rocky loam	Moderate	M	No Data	L	L
J	5.2	5.4	CmF,MhE2	Castaic-Balcom silty clay loams, Millsholm rocky loam	Severe	H	No Data	L, L	H, L
J	5.4	5.7	CmF	Castaic-Balcom silty clay loams	Severe	H	No Data	L	H
J	5.7	5.8	CmF,DA	Castaic-Balcom silty clay loams, Dams	Severe	H	No Data	L, No Data	L, No Data
J	5.8	5.9	CmF,DA,Rg	Castaic-Balcom silty clay loams, Dams, Riverwash	Severe	H	No Data	L, No Data, No Data	L, No Data, No Data
J	5.9	6.0	CyA,DA,HcA, Rg	Cortina sandy loam, dams, Hanford sandy loam, Riverwash	Slight	L	No Data	M, No Data, L, No Data	M, No Data, L, No Data
J	6.0	6.1	CyA,DA,HcA, HcC	Cortina sandy loam, dams, Hanford sandy loam	Slight	L	No Data	M, No Data, L, L	M, No Data, L, L
J	6.1	6.2	CmF,DA,HcA, HcC	Castaic-Balcom silty clay loams, Dams, Hanford sandy loam	Severe	H	No Data	L, No Data, L, L	H, No Data, L, L
J	6.2	6.3	CmF,DA,HcC	Castaic-Balcom silty clay loams, Dams, Hanford sandy loam	Severe	H	No Data	L, No Data, L	H, No Data, L
J	6.3	6.5	CmF	Castaic-Balcom silty clay loams	Severe	H	No Data	L	H
J	6.5	6.8	CmE,CmF	Castaic-Balcom silty clay loams	Severe	H	No Data	L, L	H, H
J	6.8	7.6	CmF	Castaic-Balcom silty clay loams	Severe	H	No Data	L	H
J	7.6	8.1	CmE,CmF	Castaic-Balcom silty clay loams	Severe	H	No Data	L, L	H, H
J	8.1	10.0	CmF	Castaic-Balcom silty clay loams	Severe	H	No Data	L	H
J	10.0	10.3	CmF,MhF2	Castaic-Balcom silty clay loams, Millsholm rocky loam	Severe	H	No Data	L, L	H, L
J	10.3	10.6	MhF2	Millsholm rocky loam	Severe	H	No Data	L	L
J	10.6	10.8	CnG3,MhF2	Castaic and Saugus soils, Millsholm rocky loam	Severe	H	No Data	L, L	H, L
J	10.8	10.9	MhF2	Millsholm rocky loam	Severe	H	No Data	L	L
J	10.9	11.5	CnG3,MhF2	Castaic and Saugus soils, Millsholm rocky loam	Severe	H	No Data	L, L	H, L
J	11.5	11.7	MhF2	Millsholm rocky loam	Severe	H	No Data	L	L
J	11.7	11.9	CnG3,MhF2	Castaic and Saugus soils, Millsholm rocky loam	Severe	H	No Data	L, L	H, L

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	**Mile From**	**Mile To**	**Soil MUSYM**	**Description**	**Soil Erodibility Potential**	**Sensitivity Rating**	**Linear Extensiblity Percent**	**Corrosive Soil Potential (Concrete)**	**Corrosive Soil Potential (Steel)**
J	11.9	12.0	CyA,MhF2,YoC	Cortina sandy loam, Millsholm rocky loam, Yolo loam	Severe	H	No Data	M, L, L	M, L, L
K	0.0	0.3	15	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	Severe	H	No Data	No Data	No Data
K	0.3	0.4	15,7	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex, Hanford family	Severe	H	No Data	No Data	No Data
K	0.4	0.5	15,7,HcC,ScF2	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex, Hanford family, Hanford sandy loam, Saugus loam	Severe	H	No Data	No Data, No Data, L, L	No Data, No Data, L, L
K	0.5	0.7	HcC,ScF2,SsB	Hanford sandy loam, Saugus loam, Sorrento loam	Severe	H	No Data	L, L, L	L, L, H
K	0.7	0.8	ScF2,SsB	Saugus loam, Sorrento loam	Severe	H	No Data	L, L	L, H
K	0.8	0.9	HcC,ScF2,SsB	Hanford sandy loam, Saugus loam, Sorrento loam	Severe	H	No Data	L, L, L	L, L, H
K	0.9	1.0	HcC,ScF2,YoC	Hanford sandy loam, Saugus loam, Yolo loam	Severe	H	No Data	L, L, L	L, L, L
K	1.0	1.1	ScF2,YoC	Saugus loam, Yolo loam	Severe	H	No Data	L, L	L, L
K	1.1	1.2	ScF2	Saugus loam	Severe	H	No Data	L	L
K	1.2	1.4	ScF2,YoC	Saugus loam, Yolo loam	Severe	H	No Data	L, L	L, L
K	1.4	1.5	HcC,ScF2,YoC	Hanford sandy loam, Saugus loam, Yolo loam	Severe	H	No Data	L, L, L	L, L, L
K	1.5	1.6	HcC,ScF2	Hanford sandy loam, Saugus loam	Severe	H	No Data	L, L	L, L
K	1.6	2.1	HcC,ScF2,YoC	Hanford sandy loam, Saugus loam, Yolo loam	Severe	H	No Data	L, L, L	L, L, L
K	2.1	2.2	ScF2,YoC	Saugus loam, Yolo loam	Severe	H	No Data	L, L	L, L
K	2.2	2.3	HcC,ScF2,YoC	Hanford sandy loam, Saugus loam, Yolo loam	Severe	H	No Data	L, L, L	L, L, L
K	2.3	2.4	HcC,ScF2	Hanford sandy loam, Saugus loam	Severe	H	No Data	L, L	L, L
K	2.4	2.5	MfC,OgC,ScF2	Metz loam sand, Oak Glen loam, Saugus loam	Severe	H	No Data	L, L, L	H, M, L
K	2.5	2.6	OgC,ScF2	Oak Glem loam, Saugus loam	Severe	H	No Data	M, L	M, L
K	2.6	2.7	OgC,OgE	Oak Glen loam, Ojai loam	Moderate	M	No Data	L, L	M, M
K	2.7	2.8	CyA,OgC,OgE	Cortina sandy loam, Oak Glen loam, Ojai loam	Moderate	M	No Data	M, L, L	M, M, M
K	2.8	2.9	CyA,OgE	Cortina sandy loam, Ojai loam	Moderate	M	No Data	M, L	M, M
K	2.9	3.0	CyA,HcA	Cortina sandy loam, Hanford sandy loam	Slight	L	No Data	M, L	M, L
K	3.0	3.1	CyA,HcA,MfC	Cortina sandy loam, Hanford sandy loam, Metz loamy sand	Slight	L	No Data	M, L, L	M, L, H
K	3.1	3.4	MfC,ScF2	Metz loamy sand, Saugus loam	Severe	H	No Data	L, L	L, H
K	3.4	3.7	OgC,ScF2	Oak Glen loam, Saugus loam	Severe	H	No Data	L, L	M, L
K	3.7	3.8	ScF2	Saugus loam	Severe	H	No Data	L	L
K	3.8	4.1	MfC,ScF2	Metz loamy sand, Saugus loam	Severe	H	No Data	L, L	L, H

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	**Mile From**	**Mile To**	**Soil MUSYM**	**Description**	**Soil Erodibility Potential**	**Sensitivity Rating**	**Linear Extensiblity Percent**	**Corrosive Soil Potential (Concrete)**	**Corrosive Soil Potential (Steel)**
K	4.1	4.2	MfC,OgE,ScF2	Metz loamy sand, Ojai loam, Saugus loam	Severe	H	No Data	L, L, L	L, M, H
K	4.2	4.3	OgE,ScF2	Ojai loam, Saugus loam	Severe	H	No Data	L, L	M, H
K	4.3	4.4	OgE,Rg,Sa	Ojai loam, Riverwash, Sandy alluvial land	Moderate	M	No Data	L, No Data, L	M, No Data, H
K	4.4	4.5	MfA,Rg,Sa	Metz loamy sand, Riverwash, Sandy alluvial land	Slight	L	No Data	L, No Data, L	H, No Data, H
K	4.5	4.6	MfA	Metz loamy sand	Slight	L	No Data	L	H
K	4.6	4.7	CyA,HcA,MfA	Cortina sandy loam, Hanford sandy loam, Metz loamy sand	Slight	L	No Data	M, L, L	M, L, H
K	4.7	4.8	CyA,HcA	Cortina sandy loam, Hanford sandy loam	Slight	L	No Data	M, L	M, L
K	4.8	4.9	HcA,YoC	Hanford sandy loam, Yolo loam	Slight	L	No Data	L, L	L, L
K	4.9	5.0	HcA,ScF2,YoC	Hanford sandy loam, Saugus loam, Yolo loam	Severe	H	No Data	L, L, L	L, L, L
K	5.0	5.1	ScF2,YoC	Saugus loam, Yolo loam	Severe	H	No Data	L, L	L, L
K	5.1	5.2	YoC	Yolo loam	Slight	L	No Data	L	L
K	5.2	6.0	ScF2,YoC	Saugus loam, Yolo loam	Severe	H	No Data	L, L	L, L
K	6.0	6.1	ScF2	Saugus loam	Severe	H	No Data	L	L
K	6.1	6.2	OgF,ScF2	Ojai loam, Saugus loam	Severe	H	No Data	L, L	M, L
K	6.2	6.4	OgE,OgF,ScF2	Ojai loam, Saugus loam	Severe	H	No Data	L, L, L	M, M, L
K	6.4	6.5	OgC,OgE,OgF	Ojai loam	Severe	H	No Data	L, L, L	M, M, M
K	6.5	6.7	OgC,OgF	Ojai loam	Severe	H	No Data	L, L	M, M
K	6.7	6.8	OgF	Ojai loam	Severe	H	No Data	L	M
K	6.8	6.9	CzC,OgF,ScF2	Cortina cobbly sandy loam, Ojai loam, Saugus loam	Severe	H	No Data	M, L, L	M, M, L
K	6.9	7.0	OgE,OgF,ScF2	Ojai loam, Saugus loam	Severe	H	No Data	L, L, L	M, M, L
K	7.0	7.1	OgE,ScF2	Ojai loam, Saugus loam	Severe	H	No Data	L, L	M, L
K	7.1	7.3	OgC,ScF2	Ojai loam, Saugus loam	Severe	H	No Data	L, L	M, L
K	7.3	7.4	ScF2	Saugus loam	Severe	H	No Data	L	L
K	7.4	7.5	HcA,ScF2	Hanford sandy loam, Saugus loam	Severe	H	No Data	L, L	L, L
K	7.5	7.6	HcA	Hanford sandy loam	Slight	L	No Data	L	L
K	7.6	7.9	HcA,OgF	Hanford sandy loam, Ojai loam	Severe	H	No Data	L, L	L, M
K	7.9	8.4	OgF	Ojai loam	Severe	H	No Data	L	M
K	8.4	8.5	OgF,YoC	Ojai loam, Yolo loam	Severe	H	No Data	L, L	M, L
K	8.5	8.6	OgF,ScE,ScF,YoC	Ojai loam, Saugus loam, Yolo loam	Severe	H	No Data	L, L, L, L	M, L, L, L
K	8.6	8.7	ScE,ScF,YoC	Saugus loam, Yolo loam	Severe	H	No Data	L, L, L	L, L, L
K	8.7	8.9	ScE,ScF	Saugus loam	Severe	H	No Data	L, L	L, L
K	8.9	9.2	ScF	Saugus loam	Severe	H	No Data	L	L
K	9.2	9.4	MhF2,ScF	Millsholm rocky loam, Saugus loam	Severe	H	No Data	L, L	L, L
K	9.4	10.0	MhF2	Millsholm rocky loam	Severe	H	No Data	L	L
K	10.0	10.1	122,MhF2	Millsholm loam, Millsholm rocky loam	Severe	H	No Data	M, L	L, L

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	**Mile From**	**Mile To**	**Soil MUSYM**	**Description**	**Soil Erodibility Potential**	**Sensitivity Rating**	**Linear Extensiblity Percent**	**Corrosive Soil Potential (Concrete)**	**Corrosive Soil Potential (Steel)**
K	10.1	10.2	122,125,128	Millsholm holm, Rock outcrop-Friant complex, Saugus loam	NA	NA	No Data	No Data	No Data
K	10.2	10.3	125,128	Rock outcrop-Friant complex, Saugus loam	NA	NA	No Data	No Data	No Data
K	10.3	10.4	125,128,137	Rock outcrop-Friant complex, Saugus loam, Vista coarse sandy loam	NA	NA	No Data	No Data	No Data
K	10.4	11.0	137	Vista coarse sandy loam	NA	NA	No Data	No Data	No Data
K	11.0	11.1	108,137	Capistrano-Urban land complex, Vista coarse sandy loam	NA	NA	No Data	No Data	No Data
K	11.1	11.2	108,129,137	Capistrano-Urban land complex, Saugus loam, Vista coarse sandy loam	NA	NA	No Data	No Data	No Data
K	11.2	11.3	108,128,129	Capistrano-Urban land complex, Saugus loam	NA	NA	No Data	No Data	No Data
K	11.3	11.4	108,128	Capistrano-Urban land complex, Saugus loam	NA	NA	No Data	No Data	No Data
K	11.4	11.6	104,108,129	Balcom silty clay loam, Capistrano-Urban land complex, Saugus loam	NA	NA	No Data	No Data	No Data
K	11.6	11.7	104,128,129	Balcom silty clay loam, Saugus loam	NA	NA	No Data	No Data	No Data
K	11.7	11.8	128,129,143	Saugus loam, Xerorthents-Urban land-Saugus complex	NA	NA	No Data	No Data	No Data
K	11.8	11.9	128,143	Saugus loam, Xerorthents-Urban land-Saugus complex	NA	NA	No Data	No Data	No Data
K	11.9	12.0	108,109,110,128,143		NA	NA	No Data	No Data	No Data
K	12.0	12.1	104,108,109,110		NA	NA	No Data	No Data	No Data
K	12.1	12.2	104,109,110	Balcom silty clay loam, Chualar-Urban land complex, Conejo-Urban land complex	NA	NA	No Data	No Data	No Data
K	12.2	12.4	104	Balcom silty clay loam	NA	NA	No Data	No Data	No Data
K	12.4	12.5	104,109,110,132	Balcom silty clay loam, Chualar-Urban land complex, Conejo-Urban land complex, Soper gravelly sandy loam	NA	NA	No Data	No Data	No Data
K	12.5	12.7	109,110	Chualar-Urban land complex, Conejo-Urban land complex	NA	NA	No Data	No Data	No Data
K	12.7	12.8	104,109,110	Balcom silty clay loam, Chualar-Urban land complex, Conejo-Urban land complex	NA	NA	No Data	No Data	No Data
K	12.8	13.4	104	Balcom silty clay loam	NA	NA	No Data	No Data	No Data
K	13.4	13.5	104,109,110,123	Balcom silty clay loam, Chualar-Urban land complex, Conejo-Urban land complex, Mocho-Urban land complex	NA	NA	No Data	No Data	No Data

TABLE B-1 – USDA SOILS

Location			Feature						
Segment Corridor	**Mile From**	**Mile To**	**Soil MUSYM**	**Description**	**Soil Erodibility Potential**	**Sensitivity Rating**	**Linear Extensiblity Percent**	**Corrosive Soil Potential (Concrete)**	**Corrosive Soil Potential (Steel)**
K	13.5	13.6	109,110,123	Chualar-Urban land complex, Conejo-Urban land complex, Mocho-Urban land complex	NA	NA	No Data	No Data	No Data
K	13.6	13.7	109,110	Chualar-Urban land complex, Conejo-Urban land complex	NA	NA	No Data	No Data	No Data
K	13.7	13.8	111,129	Conejo-Urban land complex, Saugus loam	NA	NA	No Data	No Data	No Data
K	13.8	14.0	111,129,132	Conejo-Urban land complex, Saugus loam, Soper gravelly sandy loam	NA	NA	No Data	No Data	No Data
K	14.0	14.1	111,129	Conejo-Urban land complex, Saugus loam	NA	NA	No Data	No Data	No Data
K	14.1	14.2	104129	Balcom silty clay loam, Saugus loam	NA	NA	No Data	No Data	No Data
K	14.2	14.3	104118,129	Balcom silty clay loam, Gazos silty clay loam, Saugus loam	NA	NA	No Data	No Data	No Data
K	14.3	14.4	104,113,118,129	Balcom silty clay loam, Cropley-Urban land complex, Gazos silty clay loam, Saugus loam	NA	NA	No Data, 7.5	No Data	No Data
K	14.4	14.6	113,118	Cropley-Urban land complex, Gazos silty clay loam	NA	NA	No Data, 7.5	No Data	No Data
K	14.6	14.9	118	Gazos silty clay loam	NA	NA	No Data	No Data	No Data
K	14.9	15.0	118,138	Gazos silty clay loam, Xerorthents	NA	NA	No Data	No Data	No Data
K	15.0	15.1	104,118,138	Balcom silty clay loam, Gazos silty clay loam, Xerorthents	NA	NA	No Data	No Data	No Data
K	15.1	15.2	104,118,133,138	Balcom silty clay loam, Gazos silty clay loam, Soper gravelly sandy loam, Xerorthents	NA	NA	No Data	No Data	No Data
K	15.2	15.3	118,133	Gazos silty clay loam, Soper gravelly sandy loam	NA	NA	No Data	No Data	No Data
K	15.3	15.4	104,113,118,133	Balcom silty clay loam, Cropley-Urban land complex, Gazos silty clay loam, Soper gravelly sandy loam	NA	NA	No Data, 7.5	No Data	No Data
K	15.4	15.4	104,113	Balcom silty clay loam, Cropley-Urban land complex	NA	NA	No Data, 7.5	No Data	No Data

Notes:
L – Low
M – Moderate
H – High

APPENDIX C: DETAILED CONSTRUCTION, OPERATION AND MAINTENANCE PROCESS

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BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

Detailed Construction, Operations and Maintenance Process

POWER ENGINEERS

BRRTP CONSTRUCTION, OPERATION AND MAINTENANCE

1.0 230 KV DOUBLE-CIRCUIT TRANSMISSION LINE

1.1 CONSTRUCTION SEQUENCE

Construction of a transmission line involves the following general sequence of events: surveying the centerline; identifying and constructing access roads; clearing right-of-way and tower sites (including construction yards and batch plants); installing foundations; assembling and erecting the towers; clearing, pulling, tensioning, and splicing sites; installing ground wires and conductors; installing counterpoise; switching station tie in; and cleanup and site reclamation. Various phases of construction would occur at different locations throughout the construction process for the Barren Ridge Renewable Transmission Project (BRRTP). This would require several contractors operating at the same time and in different locations.

The following section describes the construction components necessary for the assembly and installation of the proposed double-circuit transmission line. The description of transmission line construction sequencing and estimates for construction sites would also be relevant for the additional transmission line construction activities associated with the installation of the Castaic-Haskell Canyon #4 circuit on existing structures, and the reconductoring of the Barren Ridge – Rinaldi (BR-RIN) transmission line between the Barren Ridge Switching Station and the Rinaldi Substation.

1.1.1 Surveying Activities

The Los Angeles Department of Water and Power (LADWP) must first obtain survey permits for the portion of the Project crossing federal lands managed by the U.S. Department of Agriculture, Forest Service (USFS) and the U.S. Department of the Interior, Bureau of Land Management (BLM), and rights-of-entry for private lands. This would include the issuance of a 50-year term Special Use Permit to LADWP by the USFS and a 30-year term (renewable) Right-of-Way Grant issued by the BLM. For survey on affected private lands, LADWP would need to negotiate rights-of-entry with the local landowners. Once survey permits are obtained, construction survey work would consist of locating the centerline, tower center hubs, ROW boundaries, and tower access roads, some of which would be located outside of the ROW boundaries. Whenever possible, location of the ROW and Project facilities would be laid out to avoid identified sensitive resources. All of these activities would begin approximately one year prior to the start of construction. Cultural resources and necessary additional threatened and endangered species intensive surveys would be conducted once the survey of the centerline and access roads is completed and clearly marked.

Necessary pre-construction geotechnical investigations would include geological field mapping of each tower site, and borings by drill rig for soil sampling and bedrock corings to determine soil densities and bedrock strength. Test locations would include angle points between the Barren Ridge Switching Station and the Angeles National Forest (ANF), and five to ten locations along the selected alignment within the ANF. Seismic analysis of tower sites for slope stability would also be necessary in mountainous areas of the ANF. Existing roads would be used as much as possible, but some new roads could be required.

1.1.2 Preconstruction Weed Removal

LADWP/ANF/BLM shall prepare and implement a comprehensive, adaptive Weed Control Plan on NFS/BLM lands for pre-construction and construction invasive weed abatement. A pre-construction weed inventory shall be conducted by surveying all areas subject to ground-disturbing activity, including, but not limited to, tower pad preparation and construction areas, tower removal sites, pulling and tensioning

sites, assembly yards, and areas subject to grading for new or improved access and spur roads. In areas subject to ground disturbance, weed infestations shall be treated prior to construction according to control methods and practices for invasive weed populations designed in consultation with the USFS/BLM. The Weed Control Plan shall be updated and utilized for eradication and monitoring post construction. Weed control treatments shall include all legally permitted herbicide, manual, and mechanical methods applied with the authorization of the USFS/BLM. The application of herbicides shall be in compliance with all state and federal laws and regulations under the prescription of a Pest Control Advisor (PCA), where concurrence has been provided by the USFS/BLM, and implemented by a Licensed Qualified Applicator. Herbicides shall not be applied during or within 24 hours of a scheduled rain event. Herbicides shall not be used within Riparian Conservation Areas (RCAs) on the ANF without approval of the USFS. In riparian areas, only water-safe herbicides shall be used. Herbicides shall not be applied when wind velocities exceed six miles per hour. Where manual and/or mechanical methods are used, disposal of the plant debris will follow the regulations set by the USFS/BLM. The timing of the weed control treatment shall be determined for each plant species in consultation with the USFS/BLM (on NFS/BLM lands, respectively) with the goal of controlling populations before they start producing seeds.

1.1.3 Construction of Access Roads

The construction, operation, and maintenance of the proposed transmission line would require that heavy vehicles access tower sites along the right-of-way. Where new access roads are required, they would be constructed to support the weight of these vehicles and would typically be 16 feet wide, consisting of a 14-foot driving surface with a side drainage system between one and two feet in width. Permanent roads would be constructed where necessary for operation or maintenance, or where it is required by the landowner or land managing agency. Road standards would be addressed specifically in the Construction, Operation, and Maintenance Plan (COM Plan) and the Plan of Development (POD) during the engineering phase of the Project, and prior to a Notice to Proceed from the USFS and BLM.

Dependent upon final design and mitigation, some temporary access roads may be constructed as part of the Project. These would typically be 16 foot wide roads, but would typically have no improved ditch drainage systems. Most temporary roads would be constructed by crushing vegetation. In some areas, material and topsoil from the temporary roads would be bladed to one or both sides to facilitate rehabilitation. Following construction, bladed material can be re-spread across the disturbed road section. Seeds and roots contained within the re-spread topsoil layer normally provide a natural source for new growth.

Existing paved and unpaved highways and roads would be used where possible. Roads along existing utility corridors would also be used where possible to minimize new access road construction. In locations where existing roads can be used that are located in close proximity to the proposed centerline of the transmission line, only spur roads to the tower sites would be required. New access roads and spur roads would likely be constructed into the right-of-way where existing roads do not exist. Table 1 lists the estimated ground disturbance of access and spur roads based on terrain.

TABLE 1. ACCESS AND SPUR ROAD GROUND DISTURBANCE ESTIMATES

Ground Disturbance Categories	Access Roads		Spur Roads (average width 16 feet)	
	Average Miles of Roads Per Mile of Transmission Line	Average Acres of Disturbance Per Mile of Transmission Line*	Average Miles of Roads Per Mile of Transmission Line	Average Acres of Disturbance Per Mile of Transmission Line
1. Existing roads or agricultural land; no widening anticipated	n/a	n/a	0.3	0.6
2. Existing 8 ft wide roads that require an additional 8 ft of widening	1.0 to 2.5	Permanent 0.9 to 2.4	0.3	0.6
3. Construct new road on flat terrain (0-10%)	1.0 to 2.5	Permanent 1.9 to 4.8	0.3	0.6
4. Construct new road on sloping terrain (10-20%)[1]	2.5 to 4.0	Temporary 7.3 to 11.6 Permanent 4.8 to 7.7	0.5	1.0
5. Construct new road on steep terrain (20-30%)[1, 2]	4.0 to 6.0	Temporary 23.3 to 34.9 Permanent 7.7 to 11.6	0.8	1.6
6. Construct road on very steep terrain (greater than 30%)[1, 2]	6.0 to 8.0	Temporary 69.8 to 93.1 Permanent 11.6 to 15.5	1.0	1.9

[1] After construction of the transmission line, all access roads in Categories 4 through 6 would be restored back to 16 feet wide.
[2] On steep terrain (approximately 25% or higher) with limited access on the Angeles National Forest, the USFS may require Helicopter Mitigation.

Wherever possible, roads would be built at right angles to streams and washes. Culverts or other drainage structures would be installed as necessary across drainages, but the roads would usually follow the natural grade. In addition, road construction would include dust-control and erosion control measures in sensitive areas. All existing roads would be left in a condition equal to or better than their condition prior to the construction of the transmission line without changing their service level. Gates would be installed where required at fenced property lines to restrict general vehicular access from or to the right-of-way. Where identified within the environmental studies for mitigation purposes, access roads may be excluded or limited within specific sensitive areas, such as Riparian Conservation Areas (RCAs) on the Angeles National Forest.

1.1.4 Clearing Right-of-Way

The clearing of some natural vegetation may be required. However, selective clearing would be performed only when necessary to provide for surveying, electrical safety clearances, line reliability, and maintenance. Trimming or removal of mature vegetation, under or near the conductors, would be done to provide adequate electrical clearance as required by the National Electrical Safety Code, the North American Electrical Reliability Corporation, and California Public Utilities Commission General Order 95 standards.

Trees that could fall onto the lines or affect lines during wind-induced line swing would be removed. Normal clearing procedures are to top or remove large trees and not disturb smaller trees. Where there is a direct conflict between trees and clearance standards, the removal of trees would be jointly reviewed and agreed upon between LADWP and the owners or managers of the property. Rights-of-way would not be chemically treated unless necessary to comply with requirements of a permitting agency. On National Forest System (NFS) lands, approved herbicides would be utilized within the Project area on select invasive plant species. Invasive plant surveys and control would continue for the life of the Project.

1.1.5 Tower Site Clearing

After access roads are developed, preparation of individual structure sites would be required to install the structures. At tower locations, work areas of up to 200 feet squared in flat terrain and up to 200 by 250 feet in areas with slopes greater than eight percent may be needed. Within the work areas, at some tower locations, a level cleared area (pad) may be necessary to complete the construction of the towers. However, many tower sites would be considerably smaller depending on the size of the tower, the terrain, resource considerations, and whether helicopter construction was used, among other factors. The work area would be required for the location of tower footings, assembly of the tower, and the necessary crane maneuvers. Vegetation would be mostly crushed, and cleared only when necessary. All pads not needed for normal transmission line maintenance would be graded to blend as near as possible with the natural contours, and revegetated where required by a permitting agency. See Table 2 for tower specifications and Table 5 for estimated temporary and permanent ground disturbance associated with the double-circuit steel lattice towers.

TABLE 2. DOUBLE-CIRCUIT STEEL LATTICE TOWER SPECIFICATIONS

Tower Placement Details	Specifications	
	Categories 1 through 3 Flat (0 – 10% slope)	Categories 4 through 6 Mountainous (10 – 30% slope)
Towers per mile	±5	±5
Average span length	1,100 ft.	1,000 ft.
Average height Ground to lowest attachment	115 ft.	105 ft.
Upper body height	52 ft.	52 ft.
Overall tower height	167 ft.	157 ft.
Typical range of heights of new towers	120 – 195 ft.	110 – 185 ft.

1.1.6 Staging Areas and Batch Plants

It is anticipated that one or two construction yards or staging areas would be required for materials storage, construction equipment, construction vehicles, and temporary construction offices. Staging areas would be approximately five acres in size, and located centrally or near each end of the transmission line route. The staging areas would be located on previously disturbed private land and would be level and surfaced with crushed aggregate base. The LADWP would negotiate with landowners for specific locations of the staging areas.

Concrete for use in constructing foundations would be dispensed from a portable concrete batch plant located at approximately 15 mile intervals. A rubber-tired flatbed truck and tractor would be used to relocate each plant along the right-of-way. Commercial ready-mix concrete would be used when access to tower construction sites is economically feasible.

The construction yards and batch plants would be located on private land and serve as field offices, reporting locations for workers, parking space for vehicles and equipment, sites for material storage, and stations for equipment maintenance. Facilities would be fenced and their gates locked. Security guards would be stationed where needed. See Table 3 for estimated ground disturbance associated with the staging sites and batch plants.

TABLE 3. STAGING SITES AND BATCH PLANT GROUND DISTURBANCE ESTIMATES

Disturbance Description	Categories 1 through 3 Flat (0 – 10% slope)*	
	Maximum Estimated Disturbance Dimension per site	**Average Disturbance**
Material staging sites (2 sites)	400 x 540 ft. (5 acres)	N/A
Concrete batch plants (3 sites maximum)	2 acres, 30 mile haul distance	0.2 acre per mile
Total Average Disturbance	**0.2 acre per mile**	

*Material staging sites and concrete batch plants would not be built on terrain above 10% slope.

1.1.7 Foundation Installation

Tower foundations for the lattice structures would consist of drilled concrete piers. The foundation process would start with the boring of four holes for each lattice structure or one hole for each TSP. The holes would be bored using truck- or track-mounted excavators with various diameter augers to match diameter and depth requirements of the foundation sizes.

For a typical suspension lattice tower, each hole would typically be four feet in diameter and 25 feet deep, depending on soil conditions. For the larger angle or dead-end structures, foundations could be up to 30 or more feet deep, depending on soil conditions. Each foundation would extend above the ground line between six inches and four feet. In extremely sandy areas, soil stabilization by water or a gelling agent may be used prior to excavation. Refer to Figure 1 and Figure 2 for typical foundation details for double-circuit towers.

Following excavation of the foundation holes, each footing would be constructed by placing formwork, reinforcing steel and a tower stub into the foundation hole, positioning the stub, and encasing it in concrete. Reinforcing steel cages would be assembled at laydown yards and delivered to each structure location by flatbed truck. Spoil material would be spread around the tower site and used for fill where suitable. The foundation excavation and installation would require access to the site by a power auger or drill, a crane, material trucks, and ready-mix trucks. Typical suspension structures would require approximately 25 to 40 cubic yards of concrete and dead-end structures would require approximately 120 cubic yards of concrete.

FIGURE 1. TYPICAL FOUNDATION DESIGN FOR THE DOUBLE-CIRCUIT STEEL LATTICE TOWERS

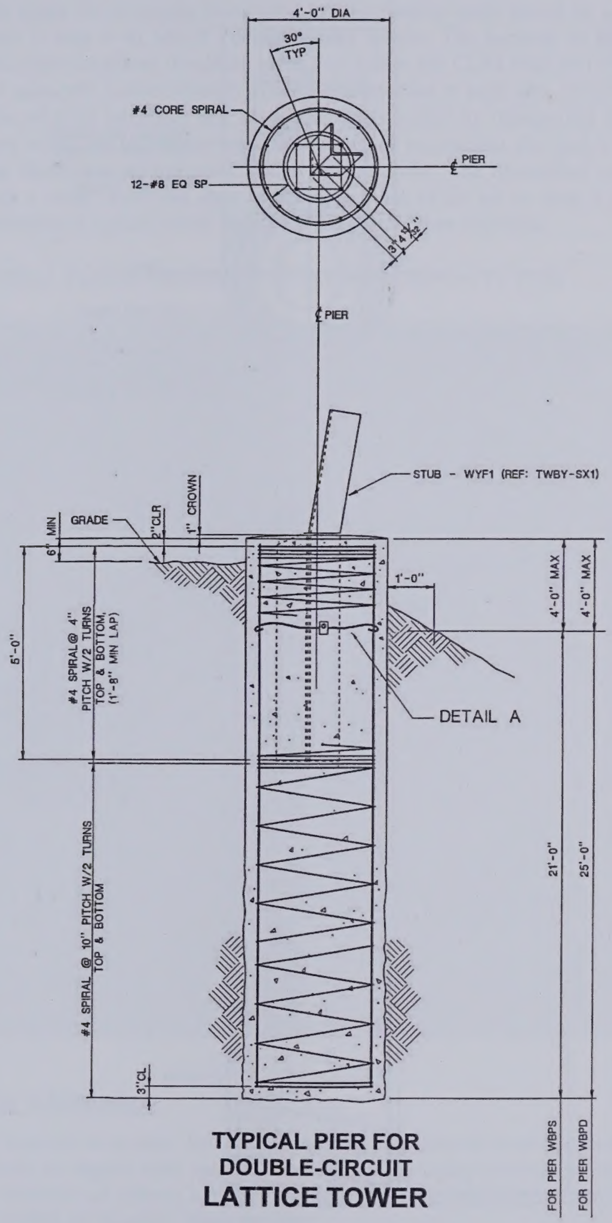
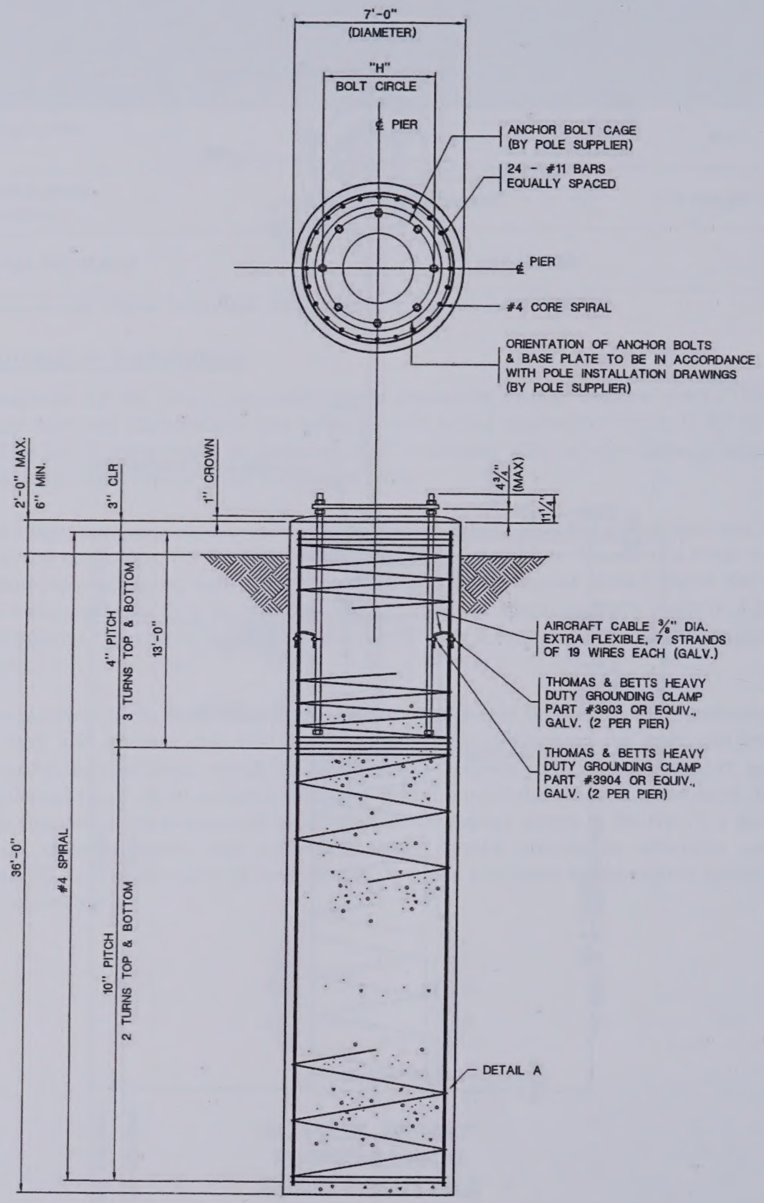

4'-0" DIA
30° TYP
#4 CORE SPIRAL
12-#8 EQ SP
℄ PIER
3"
4 13/32"
℄ PIER
STUB - WYF1 (REF: TWBY-SX1)
6" MIN
GRADE
2"CLR
1" CROWN
1'-0"
4'-0" MAX
4'-0" MAX
5'-0"
#4 SPIRAL @ 4" PITCH W/2 TURNS TOP & BOTTOM, (1'-8" MIN LAP)
DETAIL A
#4 SPIRAL @ 10" PITCH W/2 TURNS TOP & BOTTOM
21'-0"
25'-0"
3"CL
TYPICAL PIER FOR DOUBLE-CIRCUIT LATTICE TOWER
FOR PIER WBPS
FOR PIER WBPD

FIGURE 2. TYPICAL FOUNDATION DESIGN FOR TUBULAR STEEL POLES

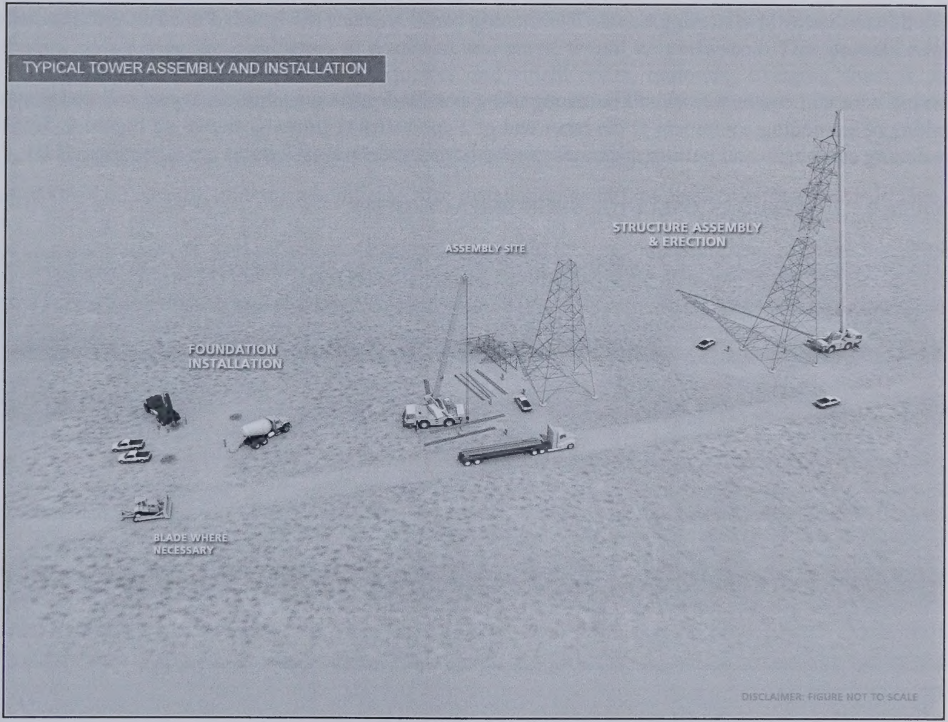

7'-0"
(DIAMETER)
"H"
BOLT CIRCLE
℄ PIER
ANCHOR BOLT CAGE
(BY POLE SUPPLIER)
24 - #11 BARS
EQUALLY SPACED
℄ PIER
#4 CORE SPIRAL
ORIENTATION OF ANCHOR BOLTS
& BASE PLATE TO BE IN ACCORDANCE
WITH POLE INSTALLATION DRAWINGS
(BY POLE SUPPLIER)
2'-0" MAX.
6" MIN.
3" CLR
1" CROWN
4 3/4" (MAX)
1 1/4"
4" PITCH
3 TURNS TOP & BOTTOM
13'-0"
AIRCRAFT CABLE 3/8" DIA.
EXTRA FLEXIBLE, 7 STRANDS
OF 19 WIRES EACH (GALV.)
THOMAS & BETTS HEAVY
DUTY GROUNDING CLAMP
PART #3903 OR EQUIV.,
GALV. (2 PER PIER)
THOMAS & BETTS HEAVY
DUTY GROUNDING CLAMP
PART #3904 OR EQUIV.,
GALV. (2 PER PIER)
36'-0"
#4 SPIRAL
10" PITCH
2 TURNS TOP & BOTTOM
DETAIL A

TYPICAL PIER FOR
DOUBLE-CIRCUIT
POLE

1.1.8 Tower Assembly and Installation

The size of the work areas for structures (assembly and installation sites) would be approximately 40,000 to 50,000 square feet (1 acre = 43,560 ft^2) depending on terrain. The location of these sites has not yet been determined, but exact locations would be identified within the COM Plan and POD prior to a Notice to Proceed from the agencies. Lattice towers would be assembled at each site, installed and bolted to the foundations. Bundles of steel members and associated parts would be transported to each tower site by truck. Steel members would be assembled into subsections of convenient size and weight on the ground. Assembly would be facilitated with a small rough-terrain crane. The assembled subsections would be erected into place by a large crane and then fastened together in the air to form a complete tower. See Figure 3 for an illustration of typical tower assembly and installation activities.

FIGURE 3. TYPICAL TOWER ASSEMBLY AND INSTALLATION ACTIVITIES


TYPICAL TOWER ASSEMBLY AND INSTALLATION
STRUCTURE ASSEMBLY & ERECTION
ASSEMBLY SITE
FOUNDATION INSTALLATION
BLADE WHERE NECESSARY
DISCLAIMER: FIGURE NOT TO SCALE

1.1.9 Conductor Installation

After the towers are erected, insulators, hardware, and stringing sheaves would be delivered to each tower site. The towers would be rigged with insulator strings and stringing sheaves at each ground wire and conductor position. Sheaves are rollers, temporarily attached to the lower end of the insulators that allow the conductor to be pulled, or "strung," along the line.

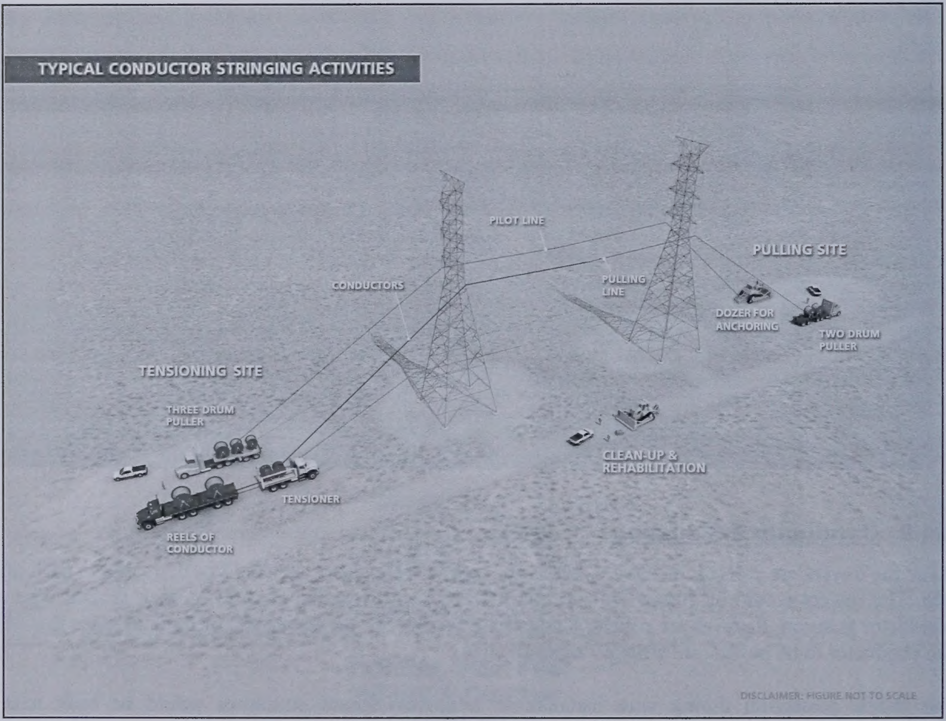
For public protection during wire installation, temporary guard structures would be built next to highways, railroads, power lines, structures, and other major obstacles. Guard structures would consist of

H-frame poles placed on either side of an obstacle. These structures would prevent ground wire, conductor, or equipment from falling on an obstacle. Equipment for installing guard structures would include augers, line trucks, pole trailers, and cranes. A guard structure would be anticipated to be necessary every five miles. The amount of ground disturbance would typically be 200 feet by 300 feet. The guard structures would be left in place until conductors and ground wires were strung, tensioned and clipped; this time frame would be approximately three weeks or longer depending on conditions. Guard structures may not be necessary for small roads. In such cases, other safety measures, such as barriers, flagmen, or other traffic control, would be used.

Pilot lines would be pulled (strung) from tower to tower by a helicopter and threaded through the stringing sheaves at each tower. The pilot line can be used to pull in the ground wire, but is used to pull in a larger-diameter, stronger pulling line for the conductor. The larger-diameter, stronger line—pulling line—would be attached to the conductors to pull them onto towers. This process would be repeated until the ground wire or conductor is pulled through all sheaves. Bundled conductors would be pulled together with the assistance of a running board. The running board attaches the bundled conductor to the pulling line.

Ground wire and conductors would be strung using powered pulling equipment at one end and powered braking or tensioning equipment at the other end of a conductor segment as shown on Figure 4. Sites for tensioning equipment and pulling equipment would be approximately 2.5 miles apart.

FIGURE 4. TYPICAL CONDUCTOR STRINGING ACTIVITIES


TYPICAL CONDUCTOR STRINGING ACTIVITIES
PILOT LINE
PULLING SITE
CONDUCTORS
PULLING LINE
DOZER FOR ANCHORING
TWO DRUM PULLER
TENSIONING SITE
THREE DRUM PULLER
CLEAN-UP & REHABILITATION
TENSIONER
REELS OF CONDUCTOR
DISCLAIMER: FIGURE NOT TO SCALE

To the greatest extent practical, pulling and tensioning sites would be located within the transmission ROW. However, some pulling and tensioning sites may occur outside the ROW. The tensioning and pulling sites could be as large as 200 feet by 500 feet, however they would be limited in size depending on each specific location and what is reasonable for safe construction practices. The size of each site would be limited as much as possible and would be designed in coordination with the responsible property owner or land management agency. Depending on topography, some grading may be required at pulling and tensioning sites to create level pads for equipment. Tensioners, line trucks, wire trailers, and tractors needed for stringing and anchoring the ground wire or conductor would be located at the tensioning sites. A puller, line trucks, sag cat and tractors would be needed for pulling and temporarily anchoring the ground wire and conductor. Table 5 includes ground disturbance estimates for conductor installation (helicopter fly yards, portable helicopter landing pads, pulling and stringing sites, and sleeving and stringing operations).

After installing the conductor ground wire or fiber optic shield wire, sagging, clipping and dead-ending activities, terminating the conductors at dead-end structures, would be performed. This process would involve adjusting the position of the conductors and shield wires, removing stringing sheaves, and permanently attaching the conductor to the insulators with specialized hardware.

1.1.10 Counterpoise Installation and Grounding Practices

Part of standard construction practice prior to wire installation would involve measuring the resistance of tower footings and installation of counterpoise (grounds) as needed. To determine if a tower would require counterpoise, ground resistance measurements would be taken at towers sites after the installation of the foundations and structures. The measurements would be evaluated to determine the numbers and locations of structures requiring counterpoise. If the resistance to remote earth for each transmission tower is greater than 10 ohms, counterpoise (grounds) would be installed to lower the resistance to 10 ohms or less. Counterpoise would consist of a bare copper-clad or galvanized steel cable buried a minimum of 12 inches deep, extending horizontally from one or more tower legs for approximately 200 feet. Typical counterpoise installation would include two installations per structure on opposite tower legs. Four installations per tower could be required in certain circumstances.

In addition to counterpoise installation, standard grounding practices during construction would include both temporary and permanent grounding of equipment and structures, such as fences or pipelines, as necessary to reduce any potential magnetically induced voltages to harmless levels. Such practices could include electrical isolation of equipment or structures and the installation of grounding wires.

1.1.11 Switching Station Tie-in

At the proposed Haskell Canyon Switching Station, the transmission lines would be connected into and out of the switching station through dedicated station structures within the switching station, commonly referred to as "bus."

1.2 UPKEEP OF CONSTRUCTION SITES

Construction sites, material storage yards, and access roads would be kept in an orderly condition throughout the construction period. Refuse and trash would be removed from the sites and disposed of in an approved manner. Oils and fuels would not be dumped along the line. Oils or chemicals would be hauled to a disposal facility authorized to accept such materials. No open burning of construction trash would occur without agency approval.

Microtrash would be cleaned daily from all work areas within known California condor habitat. Microtrash is a term used to describe small bits of debris like bottle caps, rags, screws, bolts, wires, glass, and other materials found in condor habitat.

1.3 HAZARDOUS MATERIALS WITHIN THE PROJECT AREA

Petroleum products such as gasoline, diesel fuel, helicopter fuel, crankcase oil, lubricants, and cleaning solvents would be present within the Project area during construction. These products would be used to fuel, lubricate, and clean vehicles and equipment. These products would be containerized by fuel trucks or by approved containers. When not in use, hazardous materials would be properly stored to prevent drainage or accidents.

Hazardous materials would not be drained onto the ground or into streams or drainage areas. Totally enclosed containment shall be provided for all trash. All construction waste including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials would be removed to a disposal facility authorized to accept such materials.

All construction, operation, and maintenance activities would comply with all applicable federal, state, and local laws and regulations regarding the use of hazardous substances.

The construction or maintenance crew foreman would insure that all applicable laws are obeyed. In addition, an on-site inspector would be present during construction to make sure that all hazardous materials are used and stored properly. A health and safety plan would be developed as part of the COM Plan and POD during the engineering and preconstruction phase of the Project.

1.4 SITE RECLAMATION

The ROW, including temporary construction sites, and any temporary ground disturbance outside of the ROW that may have been caused during or due to the construction of the Project (e.g., temporary access roads, staging sites, assembly yards) would be restored as required by the property owner or land management agency. All practical means would be used to restore the land to its original contour and to restore natural drainage patterns along the ROW. Because revegetation would be difficult in many areas of the Project where precipitation is minimal, it would be important to minimize disturbance during construction. All practical means would be used to increase the chances of vegetation reestablishment in disturbed areas.

The total construction period would be approximately two years. The COM Plan that would be completed during the engineering and preconstruction phase of the Project would address specific site reclamation of all disturbed areas.

1.5 FIRE PROTECTION

A Fire Management Plan would be developed for the Project and all applicable fire laws and regulations would be observed during the construction period. All personnel would be advised of their responsibilities under the applicable fire laws and regulations, including taking practical measures to report and suppress fires.

1.6 CONSTRUCTION MONITORING

An approved compliance program would be developed to address mitigation requirements associated with the avoidance of sensitive plant and animal species, cultural sites, or other sensitive features located

within or adjacent to the Project. Prior to construction, these measures will be described in detail and included in the POD.

1.7 THREE-CIRCUIT TOWER MITIGATION

A temporary transmission line would be constructed to keep the BR-RIN circuit energized during construction of the three-circuit towers. After the temporary line is constructed, the existing BR-RIN single-circuit towers would be removed to allow the new three-circuit towers to be constructed within the existing ROW. Once construction of the three-circuit towers is completed, the temporary transmission line would be removed.

The temporary transmission line would be 7.5 miles long and would consist of wood and steel single poles with an average height of 95 feet, a 3-foot by 3-foot footprint, and an average of eight poles per mile. Construction would occur within a temporary 80- to 100-foot ROW. Refer to Table 4 for specifications and to Table 5 for ground disturbance estimates. The majority of the temporary transmission line would be constructed along San Francisquito Road. Portions would also be constructed along Elizabeth Lake Road and Johnson Road. Pole placement would be adjacent to public roadways wherever possible. If necessary, temporary ROW on private property would be needed where poles could not be placed within public road ROW. The majority of poles would be direct-embedded when set in place and would not require a permanent foundation. Where additional strength is necessary at larger angle points, steel poles would be required, which could require an excavation approximately 6 feet in diameter by 20 feet deep to accommodate the concrete pier foundation that would be cast in place. Once all the poles have been constructed and the conductor installed, the existing BR-RIN circuit would be connected into the temporary line and energized. The construction would require establishment of a staging area, work areas around poles, and pull and tension sites. Access to pole sites and pull and tension sites would be from the adjacent roadways.

Approximately seven miles of the existing BR-RIN single-circuit towers would be removed, with existing ROW utilized to access the existing towers. The new three-circuit towers would be placed within the existing ROW, utilizing existing access roads. Helicopter Mitigation, as described in this section below, would be applied in steeper terrain crossing the Angeles National Forest if additional access is required. If additional access roads, considered to be longer than 300 feet, are necessary, specific locations and construction method (either helicopter or conventional) would be coordinated with the USFS. The new three-circuit tower would require a 25-foot by 30-foot structure footprint and an average of seven structures per mile; the average structure height would be 170 feet, with a maximum tower-to-tower span length of 780 feet. Structures would be installed in the same locations as the existing BR-RIN structures within the limits of standard tower design. The construction process for the new three-circuit towers would be the same as the double-circuit towers discussed above. After completion of construction of the three-circuit towers, the temporary transmission line would be removed and all temporary staging and work area land disturbances would be restored as close to previous conditions as possible and revegetated as required. Restoration practices would be consistent with Section 1.11 Decommissioning of Transmission Lines.

TABLE 4. THREE-CIRCUIT TOWER SPECIFICATIONS

Tower Placement Details	Specifications	
	Triple-Circuit	Temporary Transmission Line
ROW acquisition	None (within existing)	80-100 ft
Structures per Mile	7	8
Average span length	750 ft	650 ft

Tower Placement Details	**Specifications**	
	Triple-Circuit	**Temporary Transmission Line**
Average height (ft)		
Ground to lowest attachment	120	60
Upper body height	50	45
Overall tower height	170	105
Typical range of heights of new towers	150 - 180 ft.	95 - 105 ft.

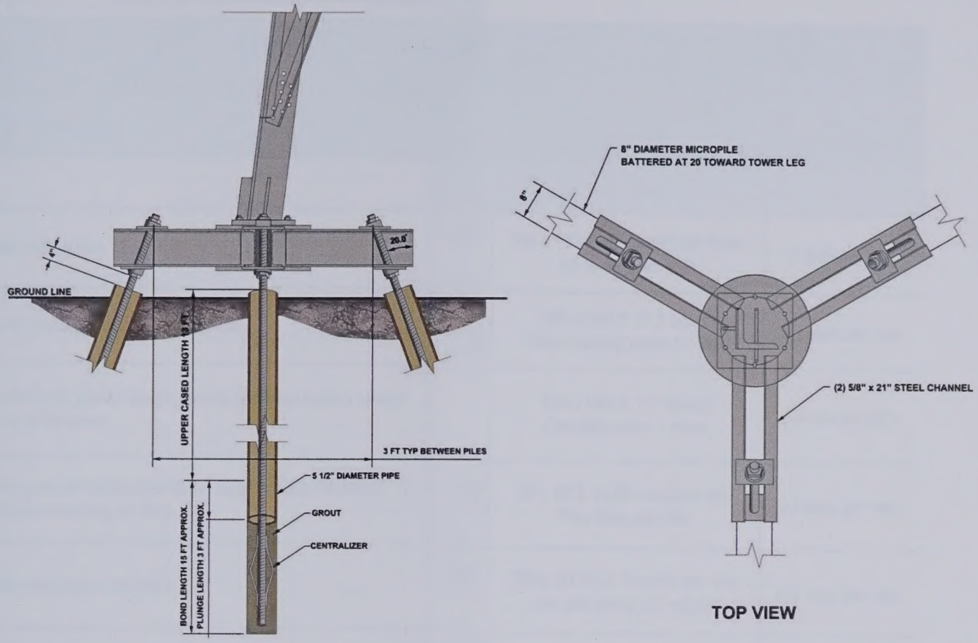
1.8 HELICOPTER MITIGATION

The following sites and ground disturbing construction activities would be required to construct the new transmission line within the identified helicopter construction areas: portable landing pads, helicopter fly yards/staging areas and associated temporary access roads, tower structure vegetation clearing, guard structures at major crossings, and access road pullouts. Refer to Table 5 for ground disturbance estimates for the Helicopter Mitigation.

The transmission line materials (tower steel, conductor reels, structure hardware, etc.) would be delivered by truck to the helicopter fly yards/staging areas. Vegetation clearing may be required at these sites to ensure safe working conditions. The fly yards/staging areas would serve as helicopter support yards for fueling and maintenance, as well as for the transport of materials and personnel. Towers may also be assembled in sections at these yards prior to delivery to the tower sites. Heavy lift helicopters would then fly the towers from the yards to the tower sites.

Portable landing pads would be located at each tower site. These pads would allow helicopters to load and unload personnel, tools, and equipment necessary for construction of foundations and assembly of tower structures. Helicopter-constructed towers that would not be in close proximity to existing access roads would utilize micropile foundations. For each tower leg, micropile foundations would use a group of three to eight 6- to 9-inch diameter casings that would be drilled and grouted into the ground. The exposed portion of the pile group would be encased in a reinforced concrete cap from the top of the casings to a depth anywhere from one to eight feet below the ground surface, depending on the terrain. Figure 5 illustrates the plan view and sections of a micropile foundation.

FIGURE 5. MICROPILE FOUNDATION


4"
20.0°
GROUND LINE
UPPER CASED LENGTH 13 FT.
3 FT TYP BETWEEN PILES
5 1/2" DIAMETER PIPE
GROUT
CENTRALIZER
BOND LENGTH 15 FT APPROX.
PLUNGE LENGTH 3 FT APPROX.
8" DIAMETER MICROPILE
BATTERED AT 20 TOWARD TOWER LEG
8"
(2) 5/8" x 21" STEEL CHANNEL

TOP VIEW

LATTICE TOWER LEG
SUPPORT

Conductor installation would proceed as for double-circuit tower installation. The equipment necessary for conductor installation would be large, heavy construction equipment that could only be brought in by truck. Some NFS roads could need maintenance or improvement to allow pulling and tensioning, but no new access or spur roads would be created for conductor installation on the helicopter-constructed towers.

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TABLE 5 GROUND DISTURBANCE ESTIMATES FOR THE PROPOSED 230 KV DOUBLE-CIRCUIT TRANSMISSION LINE

Disturbance Description	Double-Circuit Steel Lattice Towers with Helicopter Stringing of Conductors		Three-Circuit Tower Mitigation (Three-Circuit Steel Lattice Towers with Helicopter Stringing of Conductors)				Helicopter Mitigation (Steel Lattice Towers with Helicopter Installation of Towers and Conductors)	
			Three-Circuit		Temporary Transmission Line			
	Estimated Disturbance Dimension	Average Disturbance	Estimated Disturbance Dimension	Average Disturbance	Estimated Disturbance Dimension	Average Disturbance	Estimated Disturbance Dimension	Average Disturbance
	Temporary Disturbance During Installation							
Tower installation	200 x 200 ft. (0.9 acre) per tower ±5 towers per mile[1]	4.6 acres per mile	200 x 200 ft. (0.9 acre) per tower ±7 towers per mile	6.4 acres per mile	50 X 100 ft. (0.1 acre) per tower ±8 towers per mile	0.9 acre per mile	100 x 100 ft. (0.2 acre) per tower ±5 towers per mile	1 acre per mile
Guard structures at major crossings	200 x 300 ft. (1.4 acres) One crossing every 5 miles	0.3 acre per mile	200 x 300 ft. (1.4 acres) One crossing every 5 miles	0.3 acre per mile	40 X 100 ft. (0.09 acres) One crossing every 5 miles	0.02 acre per mile	200 x 300 ft. (1.3 acres) One crossing every 5 miles	0.3 acre per mile
Helicopter fly yards / staging areas (includes fueling station at one of the sites)	200 x 200 ft(0.9 acre) One site every 5 miles	0.2 acre per mile	200 x 200 ft (0.9 acre) One site every 5 miles	0.2 acre per mile	200 x 200 ft (0.9 acre) One site every 5 miles	0.2 acre per mile	650 x 650 ft. (10 acres) One site every 5 miles	2 acres per mile
Landing area/Portable helicopter landing pads (includes vegetation clearing for site)	50 x 50 ft(0.06 acre) per site One site every 3.5 miles	0.02 acre per mile	50 x 50 ft (0.06 acre) per site One site every 3.5 miles	0.02 acre per mile	50 x 50 ft (0.06 acre) per site One site every 3.5 miles	0.02 acre per mile	50 x 50 ft. (0.06 acre) per site Five sites per mile	0.3 acre per mile
Pulling and tensioning sites	200 x 500 ft (2.3 acres) per site One site every 2.5 miles[2]	0.9 acre per mile	200 x 500 ft (2.3 acres) per site One site every 2.5 miles**	0.9 acre per mile	200 x 500 ft (2.3 acres) per site One site every 2.5 miles**	0.9 acre per mile	200 x 500 ft (2.3 acres) per site One site every 2.5 miles**	0.9 acre per mile
Sleeving and miscellaneous stringing operations	100 x 200 ft. (0.5 acre) per site One site every 2.5 miles	0.2 acre per mile	100 x 200 ft. (0.5 acre) per site One site every 2.5 miles	0.2 acre per mile	50 x 100 ft (0.1 acres) per site One site every 2.5 miles	0.05 acre per mile	100 x 200 ft. (0.5 acre) per site One site every 2.5 miles	0.2 acre per mile
Total Average Temporary Disturbance[3]	**6.2 acres per mile**		**8 acres per mile**		**2.1 acres per mile**		**3.7 acres per mile**	
	Permanent Disturbance							
Tower sites, including vegetation clearance within a 10-foot radius around base of towers in accordance with state law	60 X 60 ft (0.08 acres) ±5 towers per mile	0.2 acre per mile	45 x 50 ft. (0.05 acre) ±7 towers per mile	0.14 acre per mile	N/A	N/A	60 x 60 ft. (0.08 acre) ±5 towers per mile	0.2 acre per mile
Total Average Permanent Disturbance[4]	**0.2 acre per mile**		**0.14 acre per mile**		**N/A**		**0.2 acre per mile**	

Information based on LADWP and POWER Engineers, Inc. estimates. Actual disturbance areas may be smaller based on final engineering design.

---

[1] For slopes over 10% (ground disturbance-categories 4-6), site dimensions would be 200 x 250 ft. (1.2 acres) and have an average disturbance of 5.8 acres per mile.

[2] For slopes over 10% (ground disturbance categories 4-6), sites would be every 2 miles and have an average disturbance of 1.2 acres per mile.

[3] Access and spur road disturbances included in Table 1.

[4] Ibid.

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1.9 OPERATION OF TRANSMISSION LINES

The nominal voltage for the BRRTP transmission line would be 230 kV AC. There may be minor variations of up to five percent above the nominal level depending upon load flow.

1.9.1 Permitted Uses

After the transmission line has been energized, land uses that are compatible with safety regulations (such as agriculture and grazing) would be permitted in and adjacent to the right-of-way. Incompatible land uses within the right-of-way include construction and maintenance of inhabited dwellings, and any use requiring changes in surface elevation that would affect electrical clearances of existing or planned facilities.

Land uses on public lands that comply with local regulations would be permitted adjacent to or within the ROW, with require approval from the appropriate agency. Permission to use the ROW on private lands would have to be obtained from the utility owning the transmission line.

1.9.2 Safety

Safety is a primary concern in the design of this 230 kV transmission line. The AC transmission line would be protected with power circuit breakers and related line relay protection equipment. If conductor failure occurs, power would be automatically removed from the line. Lightning protection would be provided by overhead ground wires along the line. Electrical equipment and fencing at the switching station would be grounded. All fences, metal gates, pipelines, and other metal components that cross or are within the transmission line ROW would be grounded to prevent electrical shock. If applicable, grounding outside of the ROW may also occur.

1.10 MAINTENANCE OF TRANSMISSION LINES

The 230 kV transmission line would be inspected several times annually by both ground and air patrols. Maintenance would be performed as needed. When access is required for non-emergency maintenance and repairs, LADWP would adhere to the same precautions and procedures that were taken during the original construction.

Emergency maintenance would involve prompt movement of repair crews to repair or replace any damaged equipment or infrastructure. Crews would be instructed to protect crops, plants, wildlife, and other resources of significance. Restoration procedures following completion of repair work would be those prescribed for project implementation construction. The comfort and safety of local residents would be provided for by limiting noise, dust, and the danger caused by maintenance vehicle traffic. Details would be provided in the COM Plan and POD prior to line construction.

1.10.1 Vegetation Management

Vegetation management along the transmission line ROW would be required by the North American Reliability Council (NERC). In compliance with the NERC's Standard FAC-003-l, LADWP would prepare a Vegetation Management Plan for the BRRTP. The Vegetation Management Plan would be included in the COM Plan to be completed prior to the issuance of a Notice to Proceed from the USFS and BLM. Vegetation management would consist of routine tree trimming to maintain the required minimum 10-foot clearance from conductors to vegetation (California Public Resources Code [PRC] 4293); clearance of flammable brush vegetation within a 10-foot radius around the base of transmission line towers in accordance with California PRC 4292; and clearance immediately adjacent to access roads to permit adequate access to the facilities.

1.10.2 Access Road Maintenance

Ongoing access road maintenance would be conducted in accordance with existing or new road authorizations issued to LADWP. Access road maintenance consists of those activities necessary to allow continued access to the ROW and/or each tower structure. These activities may include grading, and maintenance of drainage systems, bridges, culverts, fences, gates and signs. Motor graders, backhoes, dump trucks and pickups are used to maintain access roads.

1.11 DECOMMISSIONING OF TRANSMISSION LINES

At the end of the useful life of the proposed Project, if the facility were no longer required, or if extension of the authorizations were not granted by federal land agencies at the time they expired, the transmission line would be abandoned. Subsequently, conductors, insulators and hardware would be dismantled and removed from the ROW. Tower structures would be removed and foundations broken off below ground surface.

If the line and associated ROW are abandoned at some future date, the ROW would be available for the same uses that existed prior to construction of the Project. Following abandonment and removal of the transmission line from the ROW, any areas disturbed to dismantle the line would be restored and rehabilitated as near as possible to their original condition.

2.0 ADDITION OF NEW 230 KV CIRCUIT

Between the proposed Haskell Canyon Switching Station and the existing Castaic Power Plant, LADWP proposes the addition of 12 miles of a new 230 kV transmission circuit onto existing Castaic – Olive 230 kV Transmission Line structures (towers 1-1 through 12-1). This new circuit would be called Castaic – Haskell Canyon #4 and would utilize the same conductor (2,156 kcmil “Bluebird” ACSS/AW) as that proposed for the new 230 kV transmission line between Barren Ridge and Haskell Canyon Switching Stations.

The addition of a new circuit on existing towers would require many of the same activities of a new transmission line (surveying of ROW, rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, and cleanup). However, all work would be within existing ROW and no new towers would be constructed. Some towers may need to be modified or reinforced to carry the additional weight of the new conductor. Specific towers requiring reinforcement would be determined following detailed design of the Project. Tower reinforcement would not alter the general design or the location of the structures. This process would generally include reinforced foundations or steel member replacements.

3.0 RECONDUCTORING

LADWP proposes the reconductoring of 76 miles of the existing BR-RIN 230 kV transmission line with larger conductors between the Barren Ridge Switching Station and Rinaldi Substation (towers 176-1 through 251-1). The existing conductors (954/ 2,312 kcmil) would be replaced with a new 1,433.6 kcmil “Merrimack” ACSS/TW/HS conductor. The new conductor would have a larger diameter that allows for greater electrical capacity.

The upgrade of the existing BR-RIN would also require many of the same activities of the new transmission line (surveying of ROW, rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, and cleanup). Removal of the existing conductor would be used to string a pulling line, and this line would then be used to pull in the new conductor. All work would remain within the existing 250-foot-wide ROW, with no additional ROW required. Some of the towers would need to be

modified, replaced, and/or have foundations reinforced or replaced to carry the additional weight of the new heavier conductor.

4.0 NEW HASKELL CANYON SWITCHING STATION

As a component of the BRRTP, LADWP proposes the construction of a new switching station in Haskell Canyon, south of the Angeles National Forest on LADWP-owned property at the convergence of several existing and proposed 230 kV transmission lines (the existing BR-RIN, the proposed double-circuit Barren Ridge-Haskell Canyon, existing Castaic-Northridge, Castaic-Sylmar, Castaic-Olive, and the proposed Castaic to Haskell Canyon).

The station would be approximately 500 feet by 600 feet to accommodate the necessary circuit positions, which are made up of equipment, such as steel support structures, circuit breakers, disconnect switches, and associated equipment, and a relay house and control house containing control and protective relaying equipment. The relay and control houses would each be approximately 30 feet long by 12 feet wide by 10 feet high and constructed of gray concrete block. The station yard would include a paved internal access road approximately 16 feet wide and would be enclosed by chain-link fencing with barbed-wire extension for security. Figure 6 illustrates the preliminary design layout for the station. Figure 7 illustrates the preliminary grading plan for the station.

Necessary pre-construction geotechnical investigation on-site would include six borings by a drill rig to investigate bedrock and soil stability and four cone penetration test locations after site grading to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

Construction of the new Haskell Canyon Switching Station would consist of preconstruction surveys, clearing and grading of access roads, site grading and drainage development, installation of concrete foundations and steel support structures, installation of below- and above-ground electrical conduits for equipment power and control, installation of below- and above-grade grounding conductors, and installation of control and relay houses. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks, and flatbed trailers. Cranes, man-lifts, portable welding units, line trucks, and mechanic trucks would also be required. Construction would require an estimated 12 months with approximately 60 workers.

Site preparation work for the station would involve clearing and grading of access roads, clearing of the switchyard site, the cut and fill grading of the site, and placement and compaction of structural fill that would serve as a base for switching station facilities. The site would be graded to maintain current drainage patterns as much as possible. A 16-foot wide paved road and 100-foot by 100-foot gravel parking area would be required. The yard would be covered with crushed-rock aggregate. Native vegetation would be re-established where possible outside the switchyard fence.

Following site grading and development, reinforced concrete foundations would be installed to support the steel structures and electrical equipment and control facilities. It is estimated that 1,500 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 180 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 120-day working period. Subsequent to the foundation installation, trenches would be dug to facilitate placement of copper conductors for the station grounding mat.

Multiple transmission lines would be terminated into the switching station (i.e., the new and existing Barren Ridge – Haskell and Castaic – Haskell Canyon transmission lines) and would need support and

require the installation of galvanized steel structures. An existing 115 kV transmission line may need to be relocated around the proposed station. High-voltage bus work consisting of aluminum jumpers and tubing would be installed within the station.

FIGURE 6. HASKELL CANYON SWITCHING STATION DESIGN LAYOUT

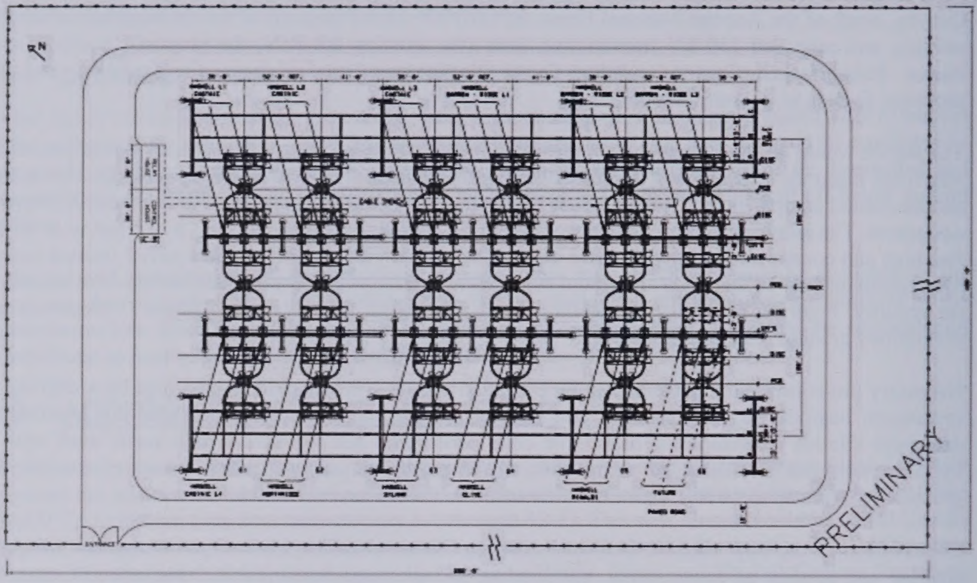
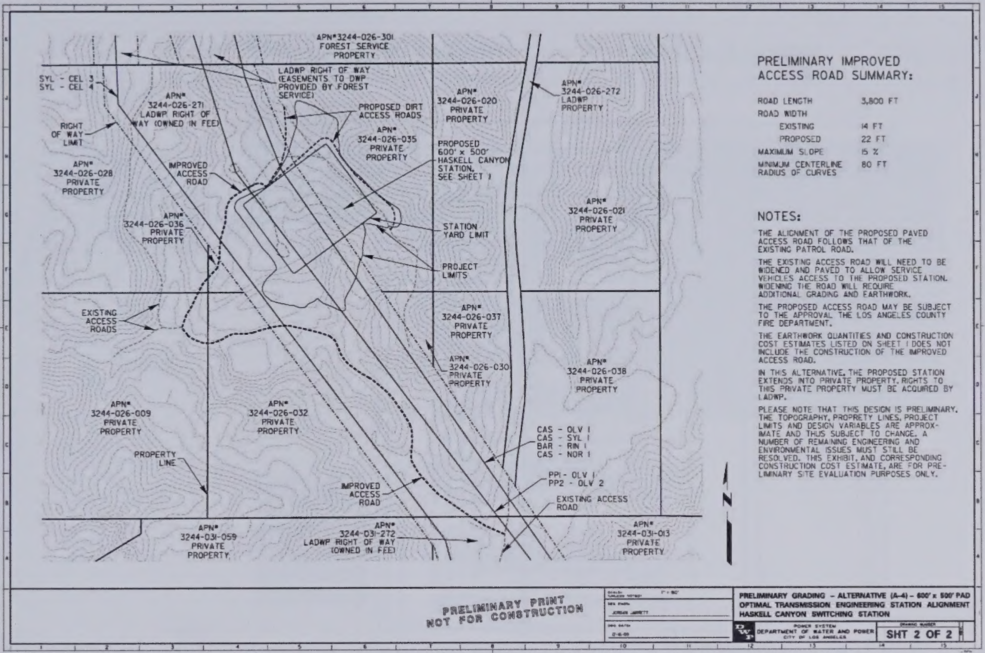


FIGURE 7. HASKELL CANYON GRADING PLAN


APN#3244-026-301
FOREST SERVICE
PROPERTY
SYL - CEL 3
SYL - CEL 4
LADWP RIGHT OF WAY
(EASEMENTS TO DWP
PROVIDED BY FOREST
SERVICE)
APN#
3244-026-271
LADWP RIGHT OF
WAY (OWNED IN FEE)
PROPOSED DIRT
ACCESS ROADS
APN#
3244-026-020
PRIVATE
PROPERTY
APN#
3244-026-272
LADWP
PROPERTY
RIGHT
OF WAY
LIMIT
APN#
3244-026-035
PRIVATE
PROPERTY
PROPOSED
600' x 500'
HASKELL CANYON
STATION,
SEE SHEET 1
APN#
3244-026-028
PRIVATE
PROPERTY
IMPROVED
ACCESS
ROAD
APN#
3244-026-036
PRIVATE
PROPERTY
STATION
YARD LIMIT
APN#
3244-026-021
PRIVATE
PROPERTY
PROJECT
LIMITS
EXISTING
ACCESS
ROADS
APN#
3244-026-037
PRIVATE
PROPERTY
APN#
3244-026-030
PRIVATE
PROPERTY
APN#
3244-026-038
PRIVATE
PROPERTY
APN#
3244-026-009
PRIVATE
PROPERTY
APN#
3244-026-032
PRIVATE
PROPERTY
CAS - OLV 1
CAS - SYL 1
BAR - RIN 1
CAS - NOR 1
PROPERTY
LINE
PP1 - OLV 1
PP2 - OLV 2
IMPROVED
ACCESS
ROAD
EXISTING ACCESS
ROAD
APN#
3244-031-059
PRIVATE
PROPERTY
APN#
3244-031-272
LADWP RIGHT OF WAY
(OWNED IN FEE)
APN#
3244-031-013
PRIVATE
PROPERTY
N
PRELIMINARY PRINT
NOT FOR CONSTRUCTION
1" = 80'
JORDAN JARRETT
2-6-09
DWP

PRELIMINARY IMPROVED ACCESS ROAD SUMMARY:

ROAD LENGTH	3,800 FT
ROAD WIDTH	
EXISTING	14 FT
PROPOSED	22 FT
MAXIMUM SLOPE	15 %
MINIMUM CENTERLINE RADIUS OF CURVES	80 FT

NOTES:

THE ALIGNMENT OF THE PROPOSED PAVED ACCESS ROAD FOLLOWS THAT OF THE EXISTING PATROL ROAD.

THE EXISTING ACCESS ROAD WILL NEED TO BE WIDENED AND PAVED TO ALLOW SERVICE VEHICLES ACCESS TO THE PROPOSED STATION. WIDENING THE ROAD WILL REQUIRE ADDITIONAL GRADING AND EARTHWORK.

THE PROPOSED ACCESS ROAD MAY BE SUBJECT TO THE APPROVAL THE LOS ANGELES COUNTY FIRE DEPARTMENT.

THE EARTHWORK QUANTITIES AND CONSTRUCTION COST ESTIMATES LISTED ON SHEET 1 DOES NOT INCLUDE THE CONSTRUCTION OF THE IMPROVED ACCESS ROAD.

IN THIS ALTERNATIVE, THE PROPOSED STATION EXTENDS INTO PRIVATE PROPERTY. RIGHTS TO THIS PRIVATE PROPERTY MUST BE ACQUIRED BY LADWP.

PLEASE NOTE THAT THIS DESIGN IS PRELIMINARY. THE TOPOGRAPHY, PROPRETY LINES, PROJECT LIMITS AND DESIGN VARIABLES ARE APPROXIMATE AND THUS SUBJECT TO CHANGE. A NUMBER OF REMAINING ENGINEERING AND ENVIRONMENTAL ISSUES MUST STILL BE RESOLVED. THIS EXHIBIT, AND CORRESPONDING CONSTRUCTION COST ESTIMATE, ARE FOR PRELIMINARY SITE EVALUATION PURPOSES ONLY.

PRELIMINARY GRADING – ALTERNATIVE (A-4) – 600' x 500' PAD
OPTIMAL TRANSMISSION ENGINEERING STATION ALIGNMENT
HASKELL CANYON SWITCHING STATION

POWER SYSTEM
DEPARTMENT OF WATER AND POWER
CITY OF LOS ANGELES

SHT 2 OF 2

5.0 EXPANSION OF BARREN RIDGE SWITCHING STATION

LADWP proposes expansion of the existing Barren Ridge Switching Station to the east side by 235 feet by 500 feet, for a total station size of 485 feet by 500 feet (approximately 5.6 acres). The expansion area of the station would include electrical structures and equipment for the addition of transmission lines, a material staging area, roadway within the station, and drainage area. Figure 8 illustrates the preliminary design layout for the station.

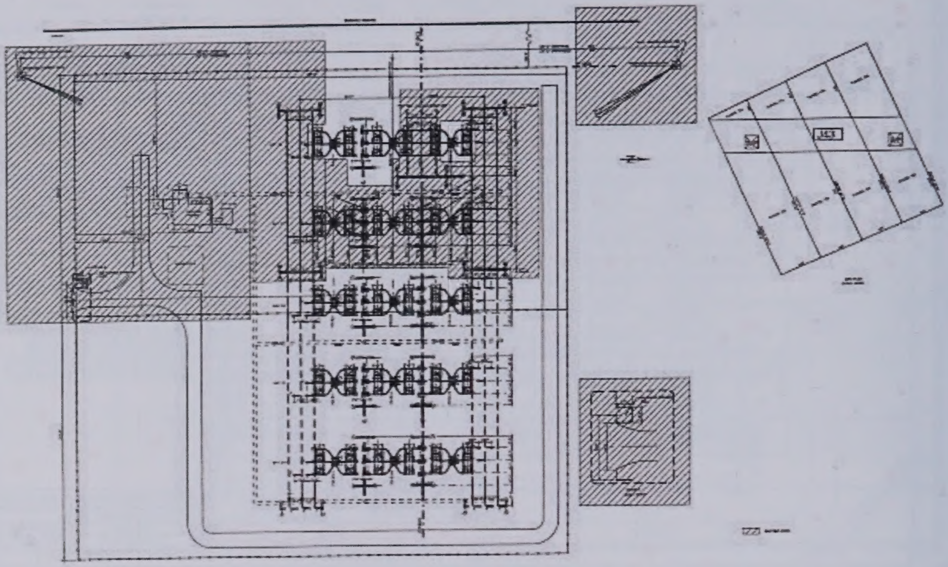
Expansion of the existing switching station would be very similar to the construction of the Haskell Canyon Switching Station as described above. Expansion would consist of preconstruction surveys, site preparation and grading, installation of reinforced concrete foundations, installation of electrical conduits for equipment power and control, and installation of structures and equipment.

Necessary pre-construction geotechnical on-site investigation would include two test pits excavated by a backhoe to investigate soil density and settlement, and four cone penetration test locations on-site to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

It is estimated that 700 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 80 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 90-day working period. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks and flatbed trailers. Cranes, man-lifts, portable welding units, line

trucks, and mechanic trucks would also be required. An estimated 8 months with approximately 60 workers would be required to expand the station.

FIGURE 8. BARREN RIDGE SWITCHING STATION EXPANSION LAYOUT



Paleontological
Resources

March 2011

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

Paleontological Resources Assessment Report

PROJECT NUMBER:
115244

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POWER
ENGINEERS

Paleontological Resources Assessment Report

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PREPARED BY: POWER ENGINEERS, INC.
731 EAST BALL ROAD, SUITE 100
ANAHEIM, CA 92805

DEPARTMENT OF PALEOSERVICES
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PO BOX 121390
SAN DIEGO, CA 92112

TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1 STUDY PERSONNEL 2
1.2 PROJECT DESCRIPTION 2
1.2.1 Construction of New 230 kV Double-Circuit Transmission Line 4
1.2.2 Addition of New 230 kV Circuit 14
1.2.3 Reconductoring of Existing Transmission Line 14
1.2.4 Construction of New Switching Station 15
1.2.5 Expansion of Existing Switching Station 16
1.2.6 Project-Wide Mitigation Measures 16
1.2.7 Construction Work Force and Schedule 16
2.0 REGULATORY FRAMEWORK 18
2.1 FEDERAL 18
2.2 STATE 18
3.0 PROJECT AREA OVERVIEW 20
3.1 NATURAL ENVIRONMENT IN THE STUDY AREA 20
3.1.1 Quaternary Alluvium 20
3.1.2 Older Alluvium 22
3.1.3 Saugus Formation 22
3.1.4 Anaverde Formation 23
3.1.5 Pico Formation 23
3.1.6 Castaic Formation 24
3.1.7 Towsley Formation 24
3.1.8 Hungry Valley Formation 25
3.1.9 Ridge Route Formation 25
3.1.10 Peace Valley Formation 26
3.1.11 Oso Canyon Formation 26
3.1.12 Quail Lake Formation 27
3.1.13 Monterey/Modelo Formation 27
3.1.14 Mint Canyon Formation 27
3.1.15 Tick Canyon Formation 28
3.1.16 Vasquez Formation 29
3.1.17 San Francisquito Formation 29
3.1.18 Plutonic Igneous Rocks 30
3.1.19 Mendenhall Gneiss 30
3.1.20 Pelona Schist 31
4.0 INVENTORY METHODS 32
5.0 AFFECTED ENVIRONMENT 33
6.0 IMPACT ASSESSMENT 34
6.1 SIGNIFICANCE CRITERIA 34
6.2 SENSITIVITY VALUES 34
6.3 IMPACT LEVELS 35
6.4 MITIGATION PLANNING 36
7.0 IMPACT RESULTS 38
7.1 NEW 230 KV TRANSMISSION LINE 38
7.1.1 Segment A 38

7.1.2 Segment B 38
7.1.3 Segment C 38
7.1.4 Segment D 38
7.1.5 Segment E 39
7.1.6 Segment F 39
7.1.7 Segment G 39
7.1.8 Segment 2a 44
7.1.9 Segment H 44
7.1.10 Segment I 44
7.1.11 115th Street 45
7.2 NEW 230 KV CIRCUIT 45
7.3 RECONDUCTORING 45
7.4 NEW HASKELL CANYON SWITCHING STATION 45
7.5 EXPANSION OF BARREN RIDGE SWITCHING STATION 46

8.0 ALTERNATIVES 47

8.1 DEVELOPMENT OF ALTERNATIVES 47
8.2 ALTERNATIVES DESCRIPTION 47
8.2.1 Action Alternatives 47
8.2.2 No Action Alternative 54
8.3 IMPACT RESULTS—ROUTING ALTERNATIVES 54
8.3.1 Alternative 1 (Segments A, C, and D) 54
8.3.2 Alternative 2 (Segments A, B, and G)—LADWP's Proposed Action 54
8.3.3 Alternative 2a (Segments A, B, G, and 2a) 54
8.3.4 Alternative 3 (Segments A, B, F, and I) 55
8.4 NO ACTION ALTERNATIVE 55
8.5 CUMULATIVE EFFECTS 55
8.5.1 Cumulative Projects List – Major Present and Reasonably Foreseeable Future Actions 55
8.5.2 Cumulative Impacts 65

9.0 REFERENCES 67

10.0 ACRONYMS AND ABBREVIATIONS 74

FIGURES

FIGURE 1-1. LADWP'S PROPOSED ACTION COMPONENTS 3
FIGURE 1-2. TYPES OF TOWERS 4
FIGURE 1-3. FOUR-CIRCUIT TOWERS TO BE UTILIZED 6
FIGURE 1-4. TYPICAL TOWER COMPONENTS 7
FIGURE 1-5. PRELIMINARY ROUTING SEGMENTS 9
FIGURE 1-6. THREE-CIRCUIT TOWER TYPES 11
FIGURE 1-7. THREE-CIRCUIT TOWER MITIGATION 12
FIGURE 3-1. SUMMARY OF GEOLOGIC ROCK UNITS ALONG THE VARIOUS PROJECT ALTERNATIVES 21
FIGURE 7-1. INITIAL IMPACTS 42
FIGURE 8-1. ACTION ALTERNATIVES 48
FIGURE 8-2. IDENTIFIED HELICOPTER MITIGATION LOCATIONS 50
FIGURE 8-3. AVENUE L RE-ROUTE ON ALTERNATIVE 3 53
FIGURE 8-4. CUMULATIVE PROJECTS 58

TABLES

TABLE 1-1. ANTICIPATED CONSTRUCTION SEQUENCE 17
TABLE 1-2. CONSTRUCTION WORKFORCE AND SCHEDULE 17
TABLE 6-1. IMPACT MATRIX COMPARING PALEONTOLOGICAL RESOURCE SENSITIVITY AND GROUND DISTURBANCE. 36
TABLE 7-1. MILEAGE FOR INITIAL IMPACTS AND PALEONTOLOGICAL RESOURCE SENSITIVITY 40
TABLE 8-1. PROPOSED GENERATION PROJECTS IN THE PROJECT VICINITY 61
TABLE 8-2. BLM RIDGECREST OFFICE APPLICATIONS FOR WIND AND SOLAR ENERGY GENERATION PROJECTS IN THE PROJECT VICINITY 62
TABLE 8-3. PROPOSED LOCAL PROJECTS IN THE PROJECT VICINITY. 65
TABLE 8-4. POTENTIAL SOURCES OF IMPACTS TO PALEONTOLOGICAL RESOURCES CAUSED BY DIFFERENT TYPES OF PROJECTS 66

APPENDICES

APPENDIX A: PALEONTOLOGY IMPACT TABLES
APPENDIX B: DETAILED CONSTRUCTION, OPERATION, AND MAINTENANCE PROCESS

1.0 INTRODUCTION

The City of Los Angeles Department of Water and Power (LADWP) is proposing the Barren Ridge Renewable Transmission Project (BRRTP or Project) to access clean, renewable resources in the Tehachapi Mountains and Mojave Desert areas, and to improve reliability and upgrade transmission capacity.

LADWP, the US Department of Agriculture, Forest Service (USFS or Forest Service) and the U.S Department of the Interior, Bureau of Land Management (BLM) are preparing a joint Environmental Impact Statement (EIS) / Environmental Impact Report (EIR) for the proposed BRRTP. LADWP is the California Environmental Quality Act (CEQA) Lead Agency, while the USFS and BLM are the federal Co-Lead Agencies under the National Environmental Policy Act (NEPA). An EIS/EIR is an informational disclosure document used to inform agency decision makers and the public of the potential significant environmental effects of a project, identify possible ways to eliminate or minimize the potential significant effects, and describe reasonable alternatives to the Proposed Action /Project.

The purpose of the Paleontological Resources study is to provide an inventory of paleontological resources within the study area and to assess the potential impacts to these resources resulting from construction and operation of each of the proposed transmission line alternative corridors (Segments), addition of a new circuit onto existing structures, reconductoring of the existing transmission line, proposed switching station, and expansion of an existing switching station. The Paleontological Resources Assessment: 1) presents the regulatory framework, 2) provides an overview of the technical methodology used in collecting baseline conditions and evaluating impacts, 3) examines the affected environment within the study corridors and vicinity, 4) describes the potential impacts on paleontological resources from construction and operation of the Project, 5) evaluates the level of potential impacts based upon NEPA/CEQA criteria; and 6) presents specific recommendations for mitigation measures to reduce or eliminate potential impacts.

Paleontology is a multidisciplinary science that combines elements of geology, biology, chemistry and physics in an effort to understand the history of life on earth. Paleontological resources, or fossils, are the remains, imprints, or traces of once-living organisms preserved in sedimentary rocks. These include mineralized, partially mineralized, or unmineralized bones and teeth, soft tissues, shells, wood, leaf impressions, footprints, burrows, and microscopic remains. The fossil record is the only direct evidence that life on earth has existed for more than 3.6 billion years. Fossils are important scientific and educational resources because they are used to:

- Study the phylogenetic (i.e., evolutionary) relationships between extinct organisms, as well as their relationships to modern groups.
- Elucidate the taphonomic, behavioral, temporal, and diagenetic pathways responsible for fossil preservation, including the biases inherent in the fossil record.
- Reconstruct ancient environments, climate change, and paleoecological relationships.
- Provide a measure of relative geologic dating which forms the basis for biochronology and biostratigraphy, and which is an independent and corroborating line of evidence for radiometric dating.
- Study the past geographic distribution of organisms and tectonic movements of land masses and ocean basins through time.
- Study patterns and processes of evolution, extinction, and speciation.

Fossils are considered non-renewable resources because the organisms they represent no longer exist. Thus, once destroyed, a fossil can never be replaced. For the purposes of this report, paleontological resources can be thought of as including not only the actual fossil remains but also the collecting localities and the geologic rock units (i.e., formations) containing those localities.

1.1 STUDY PERSONNEL

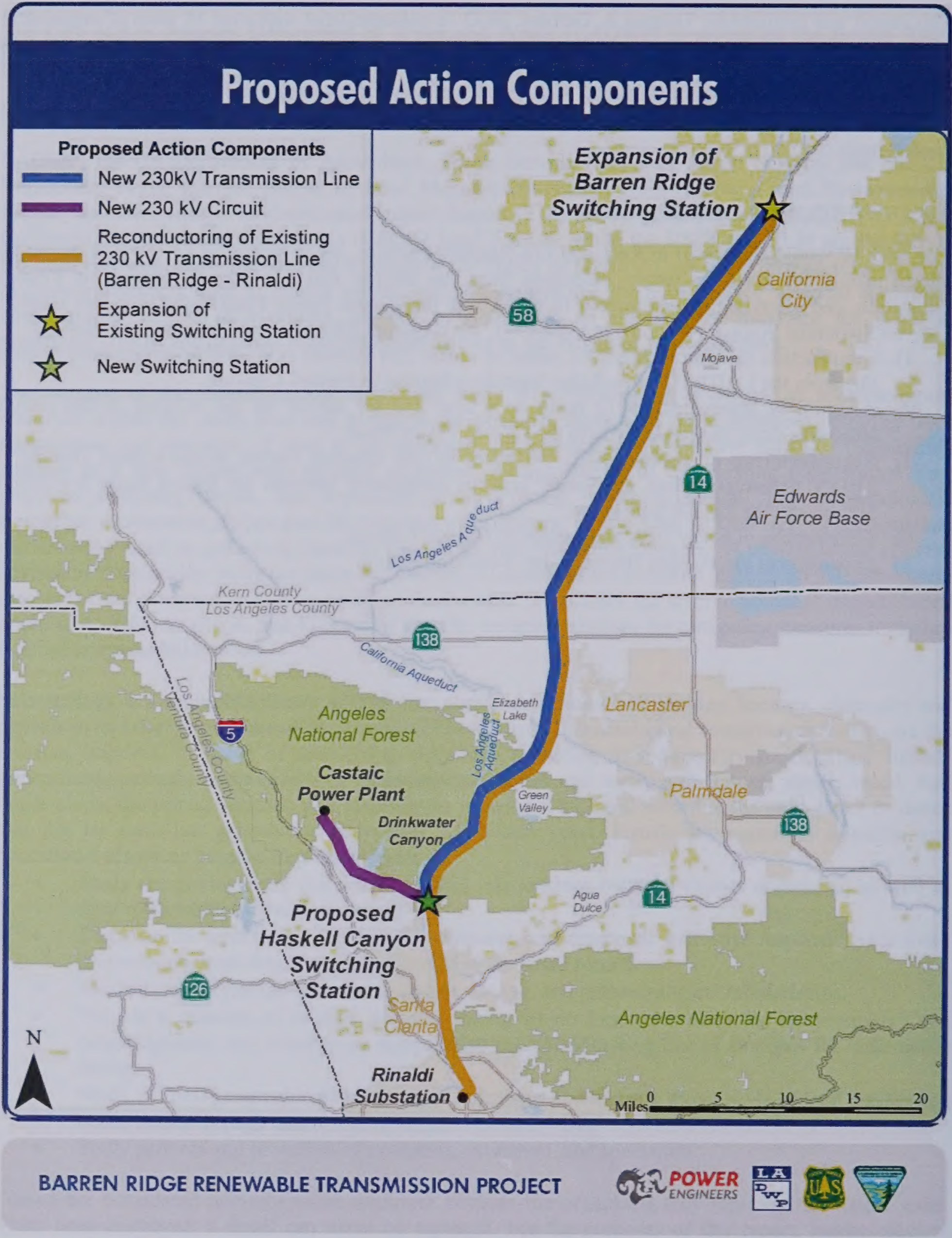
This report was prepared by Thomas A. Deméré, Ph.D., a paleontologist with over 34 years of experience, Michael X. Kirby, Ph.D., a paleontologist with over 10 years of experience, and Sarah A. Siren, M.S. a paleontologist with over 7 years of experience. Dr. Deméré and Ms. Siren are current staff members of the Department of PaleoServices at the San Diego Natural History Museum (SDNHM), San Diego, California. Dr. Kirby is a former SDNHM staff member, but still consults for the Museum on an as-needed basis.

1.2 PROJECT DESCRIPTION

The BRRTP would be located in Kern and Los Angeles counties. As proposed by LADWP, it would be approximately 76 miles in length extending from the Barren Ridge Switching Station to Rinaldi Substation, and extending approximately 12 miles from the Castaic Power Plant to the proposed Haskell Canyon Switching Station. As shown in Figure 1-1, the proposed BRRTP would include the following:

1) Construction of approximately 61 miles of a new 230 kilovolt (kV) double-circuit transmission line from the LADWP Barren Ridge Switching Station to Haskell Canyon;
2) Addition of approximately 12 miles of a new 230 kV circuit on the existing double-circuit structures from Haskell Canyon to the Castaic Power Plant;
3) Reconductoring of approximately 76 miles of the existing Barren Ridge-Rinaldi (BR-RIN) 230 kV transmission line with larger capacity conductors between the Barren Ridge Switching Station and the Rinaldi Substation;
4) Construction of a new switching station in Haskell Canyon;
5) Expansion of the existing Barren Ridge Switching Station.

FIGURE 1-1. LADWP'S PROPOSED ACTION COMPONENTS


Proposed Action Components
Proposed Action Components
New 230kV Transmission Line
New 230 kV Circuit
Reconductoring of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
Expansion of Existing Switching Station
New Switching Station
Expansion of Barren Ridge Switching Station
California City
58
Mojave
14
Edwards Air Force Base
Los Angeles Aqueduct
Kern County
Los Angeles County
138
California Aqueduct
Elizabeth Lake
Lancaster
Los Angeles Aqueduct
Angeles National Forest
5
Los Angeles County
Ventura County
Castaic Power Plant
Drinkwater Canyon
Green Valley
Palmdale
138
Agua Dulce
14
Proposed Haskell Canyon Switching Station
126
Santa Clarita
Angeles National Forest
N
Rinaldi Substation
Miles 0 5 10 15 20
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS
LA DWP

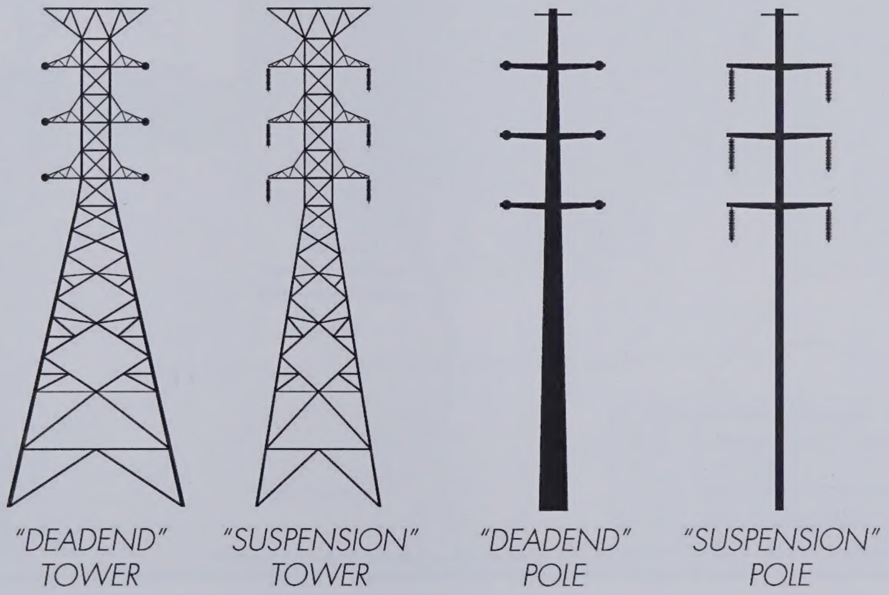
1.2.1 Construction of New 230 kV Double-Circuit Transmission Line

The proposed double-circuit 230 kV transmission line component of the BRRTP would consist of two alternating current (AC) circuits from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station in Haskell Canyon.

The proposed structures for the new transmission line would primarily be self-supporting double-circuit steel lattice towers fabricated from galvanized steel members, as shown on the left side of Figure 1-2. Depending on the environmental conditions of the surrounding terrain, the height of the proposed lattice structures would range from 110 to 195 feet, with an average tower-to-tower span of 1,000 to 1,100 feet. Appendix B lists the structure specifications for the number of structures per mile, average span length, and average heights for towers and components. Exact structure placement would be determined during engineering surveys and detailed design studies for the selected Alternative route following the Record of Decision (ROD) on the EIS/EIR. A variety of engineering, constructability, existing access, and environmental issues would be considered during detailed structure siting within the permitted ROW.

"Dead-end" towers of self-supporting, steel-lattice design would be required periodically to add longitudinal strength along the line. Dead-end towers would also be used at turn (angle) locations along the line, at heavily loaded tower locations, and at specific utility crossings (e.g., other transmission lines) for added safety. Dead-ended towers are of the same basic configuration as suspension towers (non-angle structures), the difference being in the tower "arms," insulator systems, and tower weights.

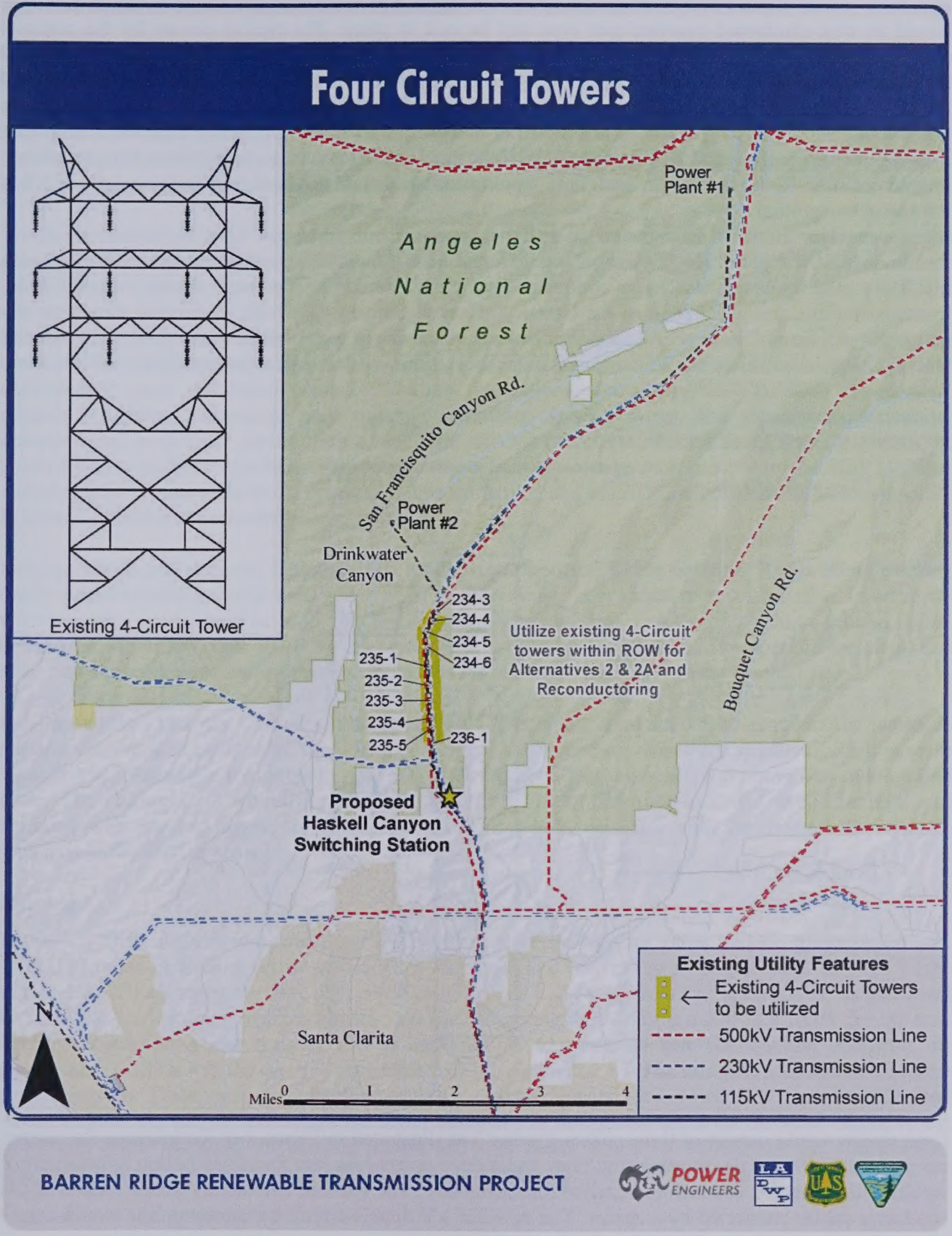
FIGURE 1-2. TYPES OF TOWERS



Self-supporting, tubular steel poles (TSP) have been proposed by LADWP as an available mitigation structure where appropriate to reduce potential impacts, such as conflicts with cultivation on agricultural lands. The TSPs can reduce impacts in some cases due to a smaller footprint than the proposed self-supporting steel lattice structures; however, more TSPs per mile are necessary due to a shorter average span between structures. The TSPs would have an average height range between 95 and 180 feet, depending on the conditions of the surrounding terrain, with an average tower-to-tower span of 700 to 800 feet. Refer to Figure 1-2 for an illustration of the double-circuit poles.

For the majority of the alignment, the two new 230 kV circuits would be placed on new double-circuit transmission towers, but for approximately 1.5 miles, the circuits would be placed on existing four-circuit structures that are located just north of the proposed Haskell Canyon Switching Station. Between where the existing BR-RIN crosses Dry Canyon to the intersection of the Castaic transmission lines, LADWP has existing four-circuit towers with three vacant positions. The existing towers would be utilized in this section for the proposed 230 kV double circuit transmission line instead of constructing new towers. See Figure 1-3 for the location and illustration of the existing four-circuit towers to be utilized.

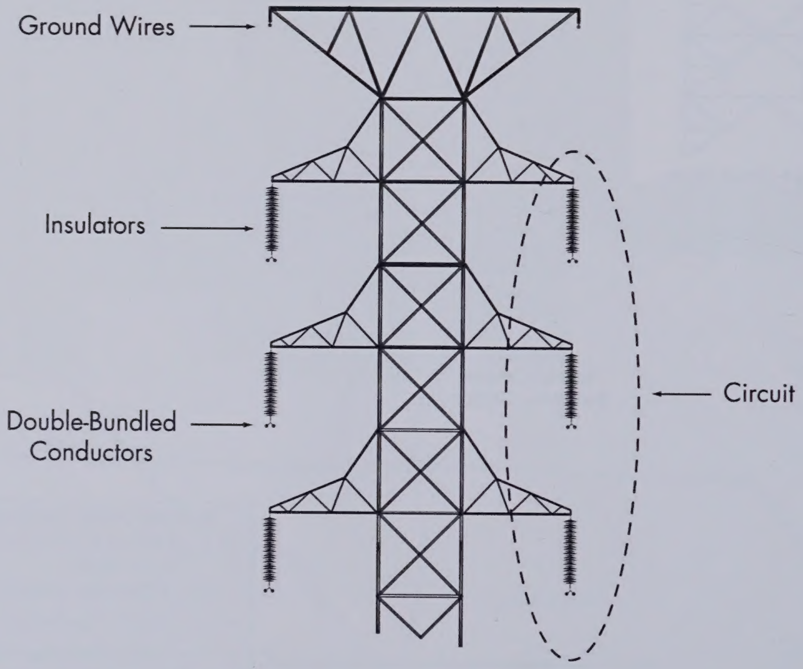
FIGURE 1-3. FOUR-CIRCUIT TOWERS TO BE UTILIZED


Four Circuit Towers
Existing 4-Circuit Tower
Angeles National Forest
Power Plant #1
Power Plant #2
San Francisquito Canyon Rd.
Drinkwater Canyon
234-3
234-4
234-5
234-6
235-1
235-2
235-3
235-4
235-5
236-1
Utilize existing 4-Circuit towers within ROW for Alternatives 2 & 2A and Reconductoring
Bouquet Canyon Rd.
Proposed Haskell Canyon Switching Station
Santa Clarita
N
Miles 0 1 2 3 4
Existing Utility Features
Existing 4-Circuit Towers to be utilized
500kV Transmission Line
230kV Transmission Line
115kV Transmission Line
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS
LA DWP

The self-supporting steel lattice structures and TSPs would utilize concrete foundations. Steel lattice structures would require four footings (one for each leg); TSPs would require single footings. Footings would be steel-reinforced concrete pier type and be cast in place. The typical design for the concrete footings for lattice structures would be between 2.5 and 5.0 feet in diameter, with an average depth of 20 feet depending on soil conditions. Typical design for single foundations for TSPs would include augured holes approximately five to seven feet in diameter and 15 to 30 feet deep, depending on conditions. Formwork steel reinforcing would be assembled in the hole prior to casting concrete in place. Reinforcing steel would become integral to the lower leg of the steel lattice structure during assembly. An above-ground concrete form placed over each hole would result in a final concrete foundation height of 0.5 to 2.0 feet above ground level.

As illustrated in Figure 1-4, Typical Tower Components, each tower carries conductors ("wires"), insulators, and ground wires. The conductor being considered for the new double-circuit 230 kV transmission line and installation of the Castaic – Haskell Canyon #4 circuit on existing structures is a bundled 715.5 kcmil "Starling" ACSS/AW. The reconductoring of the BR-RIN transmission line between Barren Ridge Switching Station and Rinaldi Substation would require a bundled 1,433.6 kcmil "Merrimack" ACSS/TW/HS conductor.

FIGURE 1-4. TYPICAL TOWER COMPONENTS



Each circuit would consist of three phases ("wires") as illustrated in Figure 1-4. To increase the current-carrying capability of the transmission lines and reduce power loss, the Proposed Action (Alternative 2) would utilize bundled conductors installed for each phase. The bundled conductors would consist of two conductor cables connected by a spacer. The new 230 kV double-circuit transmission line would consist of a total of six double-bundled (12 individual) wires.

Minimum conductor height above the ground, under normal operation of the line, is 30 feet. Greater clearances may be required in certain areas to allow for clearances over trees or other vegetation that

could pose a risk to the operation of the transmission line. Minimum conductor clearance would dictate the exact height of each tower based on topography and safety clearance requirements.

Insulators are used to provide the physical connection of conductors to structures. These system components are made of very low conducting materials (polymer insulators) that inhibit the flow of electric current from energized conductors to ground or to other energized system elements. Insulators and their associated hardware are to be configured in an "I" assembly to support conductors while maintaining required distances between phases and grounded structures. Each "I" string would consist of six-inch diameter insulators between six and eight feet long.

To shield conductors from hazard of direct lightning strikes by transferring lightning currents into the ground, overhead ground wires (shield wires) or fiber optic ground wire would be installed on top of new structures.

Construction of a transmission line involves the following general sequence of events: surveying activities; identifying and constructing access roads; clearing ROW and tower sites (including construction yards and batch plants); installing foundations; assembling and installing the towers; clearing, pulling, tensioning, and splicing; installing ground wires and conductors; installing counterpoise; switching station tie-in; and site upkeep and site reclamation. Various phases of construction would occur at different locations throughout the construction process for the BRRTP. This would require several contractors operating at the same time and in different locations. Refer to Appendix B for a description of each construction activity.

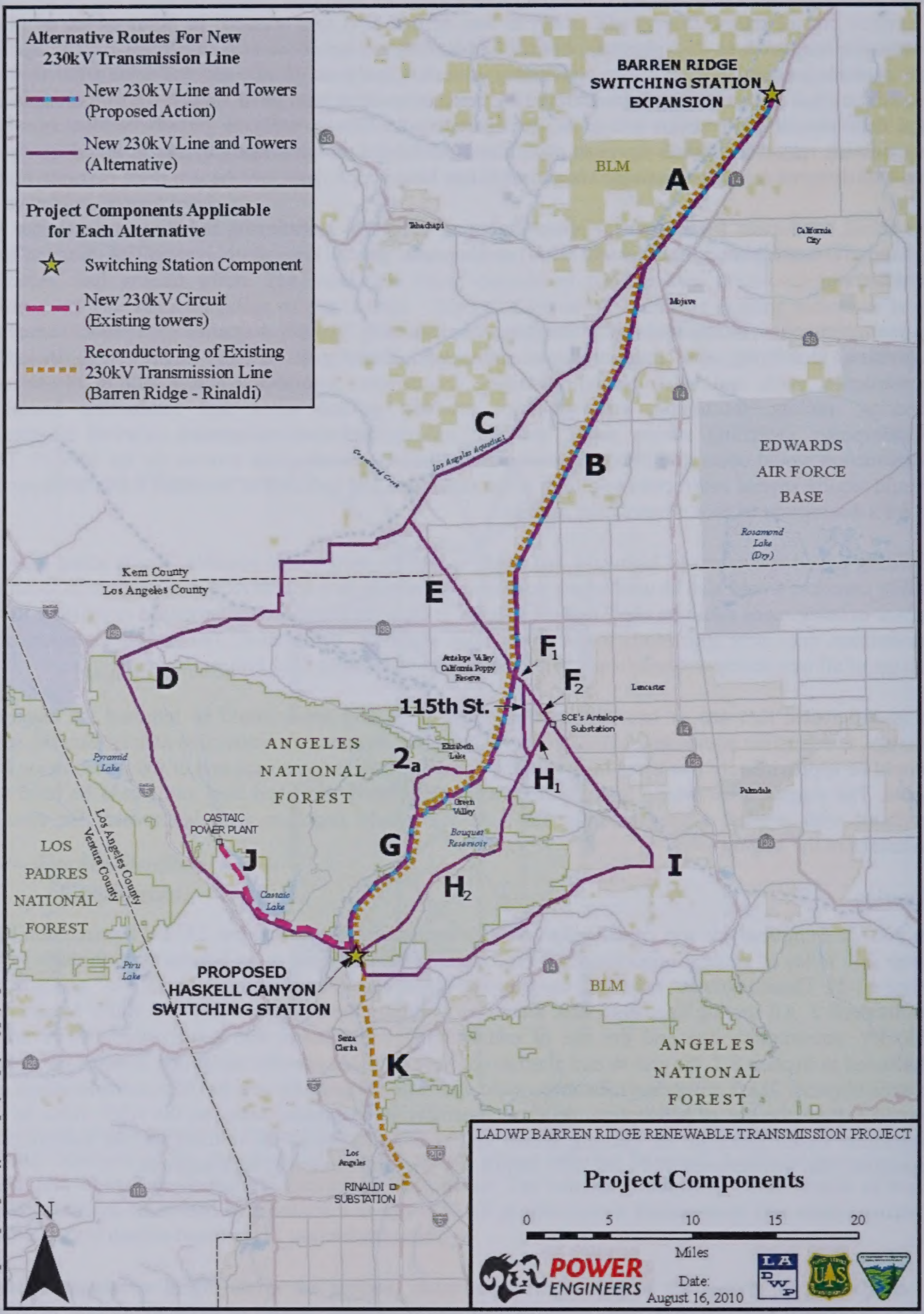
Existing paved and unpaved highways and roads would be used where possible. Roads along existing utility corridors would also be used where possible to minimize new access road construction. In locations where existing roads could be used, that are located in close proximity to the proposed or existing ROW centerlines, only new spur roads to the tower sites would be constructed. The specific locations and design of all new access and spur roads would be determined during final Project design.

It is anticipated that one or two construction yards or staging areas would be required for materials storage, construction equipment, construction vehicles, and temporary construction offices. Staging areas would be approximately five acres in size, and located centrally or near each end of the transmission line route. The staging areas would likely be located on previously disturbed land and would be level and surfaced with crushed aggregate base. The LADWP would negotiate with landowners for specific locations of the staging areas.

Routing

In 2007, a siting analysis was conducted to identify appropriate sites for a new 230 kV transmission line. Over 200 miles of routing opportunities were identified and referred to as Segments A through I (see Figure 1-5). These segments were then combined to create end-to-end routing "alternatives" as discussed in Section8.2. All routing Segments were identified assuming the need for a 200-foot ROW for the new 230 kV transmission line and the use of conventional transmission line construction. However, as discussed in Section 8.2, the end-to-end alternatives have included specific mitigation measures to reduce certain impacts. These mitigation measures would eliminate the need for new ROW in some locations and would require the use of helicopters for tower assembly in designated areas on the ANF. Also, to the maximum extent possible, all existing access and spur roads would be utilized for the construction, operation, and maintenance of the BRRTP. Below is a brief description of each segment.

FIGURE 1-5. PRELIMINARY ROUTING SEGMENTS


Alternative Routes For New 230kV Transmission Line
New 230kV Line and Towers (Proposed Action)
New 230kV Line and Towers (Alternative)
Project Components Applicable for Each Alternative
Switching Station Component
New 230kV Circuit (Existing towers)
Reconductoring of Existing 230kV Transmission Line (Barren Ridge - Rinaldi)
BARREN RIDGE SWITCHING STATION EXPANSION
BLM
A
B
C
D
E
F1
F2
115th St.
2a
G
H1
H2
I
J
K
Tehachapi
California City
Mojave
Los Angeles Aqueduct
Cottonwood Creek
EDWARDS AIR FORCE BASE
Rosamond Lake (Dry)
Kern County
Los Angeles County
Antelope Valley California Poppy Reserve
Lancaster
SCE's Antelope Substation
Palmdale
ANGELES NATIONAL FOREST
Elizabeth Lake
Green Valley
Bouquet Reservoir
Pyramid Lake
CASTAIC POWER PLANT
Castaic Lake
LOS PADRES NATIONAL FOREST
Los Angeles County
Ventura County
Piru Lake
PROPOSED HASKELL CANYON SWITCHING STATION
Santa Clarita
Los Angeles
RINALDI SUBSTATION
BLM
ANGELES NATIONAL FOREST
N
LADWP BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
Project Components
0
5
10
15
20
Miles
POWER ENGINEERS
Date: August 16, 2010
LADWP
W:\11502_LADWP_Barren_RDG4\Apps\Corridor_Study\Tech_Report\Fig1_Projects_8x11.mxd
115244_Segs_Rev4_081610_KES

Segment A is 13 miles long and runs from LADWP's Barren Ridge Switching Station to the unincorporated community of Mojave, California. It would traverse four miles of BLM managed public lands and parallel LADWP's existing 230 kV Barren Ridge – Rinaldi Transmission Line (BR-RIN) and the 500 kV Pacific Direct Current Intertie (PDCI). It traverses four miles of BLM-managed lands.

Segment B is 27 miles long and starts just north of the unincorporated community of Mojave, California and travels south to a point one mile east of the Antelope Valley California Poppy Reserve. This segment parallels LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines for its entire length.

Segment C is 22 miles long and begins at the location as Segment B, north of the unincorporated community of Mojave, California. Segment C parallels the Los Angeles Aqueduct in a southwest direction to Cottonwood Creek. No existing transmission lines are located within the aqueduct corridor; however, Southern California Edison's (SCE's) Tehachapi Renewable Transmission Project's (TRTP) Alternative 10A is also proposed along the same corridor.

Segment D is 48 miles long and would traverse 16 miles of National Forest System (NFS) lands. This segment generally parallels the Los Angeles Aqueduct in a southwest direction, beginning near Cottonwood Creek and traveling to Lancaster Road. It then travels west to the Interstate 5 freeway utility corridor and continues southeast along LADWP's existing Castaic – Rinaldi corridor to the proposed Haskell Canyon Switching Station. Five high voltage transmission lines are located along the Interstate 5 section of the segment. Oil and gas pipelines are also located in the same I-5 corridor. Continuing further south near Castaic Power Plant, Segment D would be located to the south of two existing LADWP double-circuit 230 kV transmission line towers until reaching the proposed Haskell Canyon Switching Station.

Segment E is 11 miles long and begins near Cottonwood Creek at the intersection of Segments C and D. Segment E travels in a southeast direction and intersects Segment B one mile east of the Antelope Valley California Poppy Reserve. Three existing high voltage transmission lines (Midway-Vincent 500 kV, Antelope-Vincent 230 kV, and Antelope-Mesa 230 kV) are located within the corridor that Segment E would parallel. SCE's proposed TRTP Segment 4 is also proposed adjacent this same corridor.

Segment F is the shortest segment, at four miles in length, and begins at the intersection of Segments B and E one mile east of the Antelope Valley California Poppy Reserve. Three existing high voltage transmission lines (Midway-Vincent 500 kV, Antelope-Vincent 230 kV, and Antelope-Mesa 230 kV) are also located parallel to this segment.

The 115th Street Segment was proposed as a modification to avoid impacts to residents in the Antelope Valley near Segments F and H, described below. It begins mid-way within Segment F near SCE's Antelope Substation and parallels 115th Street south to the California Aqueduct. No existing transmission lines occur within this corridor; however, TRTP's proposed Segment 4 would be located along this alignment. This segment would split Segments F and H as shown in Figure 1-5 creating these Segments into F1, F2, H1 and H2.

Segment G is 21 miles long. Thirteen miles traverse National Forest System (NFS) lands. It travels south from the intersection of Segments B and F one mile east of the Antelope Valley California Poppy Reserve to the proposed Haskell Canyon Switching Station, located near the southern boundary of the ANF. It is a designated utility corridor containing LADWP's existing 230 kV BR-RIN and 500 kV PDCI lines. The BRRTP proposes to use its existing four-circuit structures for two miles, from towers 234-3 to 236-2 (see Figure 1-3).

Segment 2a is seven miles long. It would bypass the unincorporated community of Green Valley and follow an existing fire road through ANF. Segment 2a would not parallel existing transmission facilities, and a new utility corridor would be required.

Segment H is 20 miles long and would parallel SCE's Antelope-Pardee line. It starts near SCE's Antelope Substation at the intersection of Segments F and I and traverses 13 miles of NFS lands to the proposed Haskell Canyon Switching Station. As requested by the USFS, all portions of this segment that fall within the northern and southern borders of the ANF would be constructed entirely by the use of helicopters. The helicopter construction requirement was established by the USFS for consistency of transmission line construction within the existing Antelope-Pardee transmission line corridor. No new access roads would be constructed except those required for pulling and tensioning sites or staging locations for construction materials. The addition of the 115th Street Segment, described above, splits the Segment into H1 (northern portion) and H2 (southern portion).

Segment I is 32 miles long. It begins near the Antelope Substation at the intersection of Segments F and H, and heads southeast through the City of Palmdale, parallel SCE's existing high voltage transmission lines (Midway-Vincent 500 kV, Antelope-Vincent 230 kV, and Antelope-Mesa 230 kV). The segment continues directly south to an existing LADWP transmission line corridor, then continues in a southeast direction to the proposed Haskell Canyon Switching Station, parallel LADWP's existing high voltage transmission lines (Victorville-Rinaldi 500 kV and Adelanto-Rinaldi 230 kV). A majority of this segment would be located outside of NFS lands. Two miles would be located on NFS lands.

Segment J is located parallel to the southern portion of Segment D. Segment J would consist of a new single 230 kV circuit to be placed on existing double-circuit towers between Castaic Power Plant and the proposed Haskell Canyon Switching Station (see discussion in Section 1.2.2 below).

Three-Circuit Tower Mitigation

In areas where there are ROW expansion constraints and where LADWP has existing 230 kV transmission lines, LADWP is proposing to construct three-circuit towers within the existing ROW to carry the existing BR-RIN circuit and the two proposed Barren Ridge to Haskell Canyon (BR-HC) circuits. This would avoid various impacts, including the acquisition of residential property in the unincorporated communities of Willow Springs (milepost 27.1 to 27.6) and Elizabeth Lake and Green Valley (milepost 44.6 to 51.7). Refer to Figure 1-6 for an illustration of three-circuit tower types, and to Figure 1-7, the Three-Circuit Tower Mitigation Map, for proposed locations.

FIGURE 1-6. THREE-CIRCUIT TOWER TYPES

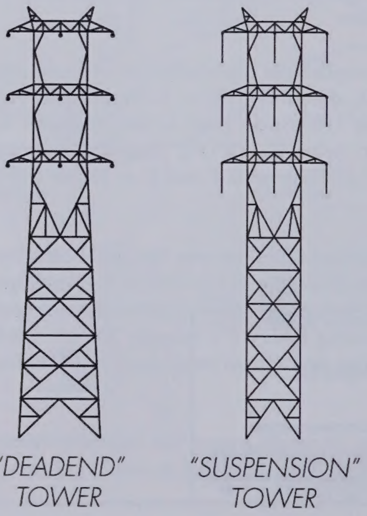
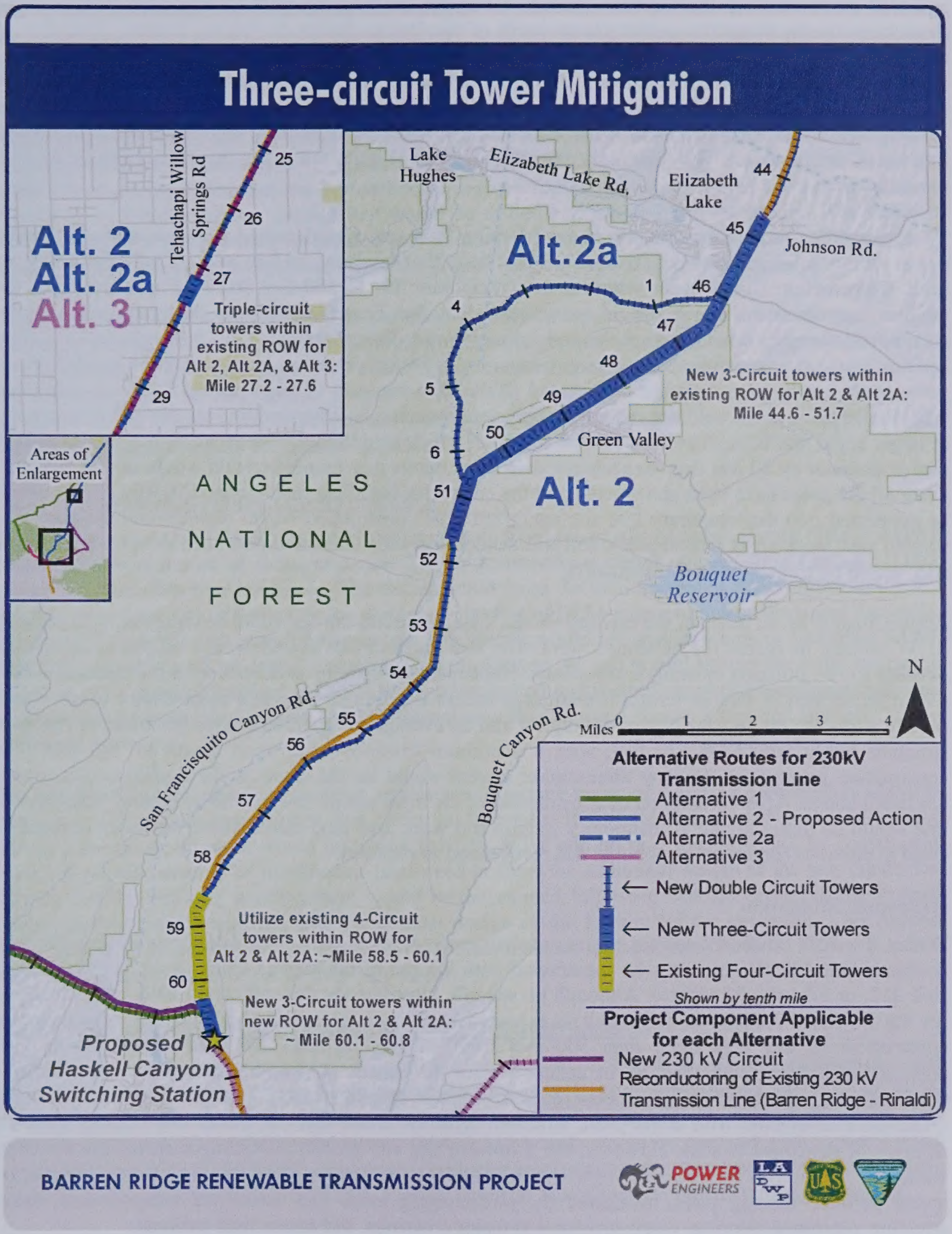


FIGURE 1-7. THREE-CIRCUIT TOWER MITIGATION


Three-circuit Tower Mitigation
Tehachapi Willow Springs Rd
25
26
27
29
Alt. 2
Alt. 2a
Alt. 3
Triple-circuit towers within existing ROW for Alt 2, Alt 2A, & Alt 3: Mile 27.2 - 27.6
Areas of Enlargement
Lake Hughes
Elizabeth Lake Rd.
Elizabeth Lake
Johnson Rd.
Alt. 2a
1
4
5
6
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
New 3-Circuit towers within existing ROW for Alt 2 & Alt 2A: Mile 44.6 - 51.7
Green Valley
Alt. 2
ANGELES NATIONAL FOREST
Bouquet Reservoir
N
Miles 0 1 2 3 4
San Francisquito Canyon Rd.
Bouquet Canyon Rd.
Utilize existing 4-Circuit towers within ROW for Alt 2 & Alt 2A: ~Mile 58.5 - 60.1
New 3-Circuit towers within new ROW for Alt 2 & Alt 2A: ~ Mile 60.1 - 60.8
Proposed Haskell Canyon Switching Station
Alternative Routes for 230kV Transmission Line
Alternative 1
Alternative 2 - Proposed Action
Alternative 2a
Alternative 3
← New Double Circuit Towers
← New Three-Circuit Towers
← Existing Four-Circuit Towers
Shown by tenth mile
Project Component Applicable for each Alternative
New 230 kV Circuit
Reconductoring of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS
L.A. DWP

LADWP must maintain the electrical service along the existing BR-RIN transmission line to avoid impacts to the hydroelectric power plants north of the Barren Ridge Switching Station. Therefore, a temporary transmission line would be constructed to keep the BR-RIN circuit energized during construction of the three-circuit towers. After the temporary line is constructed, the existing BR-RIN single-circuit towers would be removed to allow the new three-circuit towers to be constructed within the existing ROW. Once construction of the three-circuit towers is completed, the temporary transmission line would be removed. The temporary transmission line is expected to be in place from six to nine months.

The temporary transmission line would be 7.5 miles long and would consist of wood and steel single poles with an average height of 95 feet, a 3-foot by 3-foot footprint, and an average of eight poles per mile. Construction would occur within a new temporary 80- to 100-foot ROW. The majority of the temporary transmission line would be constructed along San Francisquito Road. Portions would also be constructed along Elizabeth Lake Road and Johnson Road. Pole placement would be adjacent to public roadways wherever possible. If necessary, temporary ROW on private property would be needed where poles could not be placed within public road ROW. The majority of poles would be direct-embedded when set in place and would not require a permanent foundation. Where additional strength is necessary at larger angle points, steel poles would be required, which could require an excavation approximately 6 feet in diameter by 20 feet deep to accommodate the concrete pier foundation that would be cast in place. Once all the poles have been constructed and the conductor installed, the existing BR-RIN circuit would be connected into the temporary line and energized. The construction would require establishment of a staging area, work areas around poles, and pull and tension sites. Access to pole sites and pull and tension sites would be from the adjacent roadways.

Approximately seven miles of the existing BR-RIN single-circuit towers would be removed, with existing ROW utilized to access the existing towers. The new three-circuit towers would be placed within the existing ROW, utilizing existing access roads. Helicopter Mitigation, as described in this section below, would be applied in steeper terrain if additional access is required. The new three-circuit tower would require a 25-foot by 30-foot structure footprint and an average of seven structures per mile; the average structure height would be 170 feet, with a maximum tower-to-tower span length of 780 feet. The construction process for the new three-circuit towers would be the same as the double-circuit towers discussed above. After completion of construction of the three-circuit towers, the temporary transmission line would be removed and all temporary staging and work area land disturbances would be restored as close to previous conditions as possible and revegetated as required.

Helicopter Mitigation

Within the ANF where the terrain is steep and access is limited, the USFS would require that the new double-circuit 230 kV structures be constructed with the use of helicopters (such as the Hughes 500 or Bell 212, or Sikorsky Skycrane). Although no specific locations for this mitigation have been identified for the Proposed Action, as defined, it is expected USFS would require the helicopter mitigation for construction in any area more than 300 feet from an existing road and with slopes greater than approximately 25 percent. The use of helicopters for the construction of transmission tower structures would eliminate the need for new access roads to structure locations, and would therefore minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites. However, the following site and ground disturbing construction activities would be required to construct the new transmission line within the identified helicopter construction areas: portable landing pads, helicopter fly yards/staging areas and associated access roads, tower structure vegetation clearing, guard structures at major crossings, and access road pullouts.

Temporary 24-foot wide access roads would be required to access the helicopter fly yards/staging areas. The transmission line materials (tower steel, conductor reels, structure hardware, etc.) would be delivered by truck to the helicopter fly yards/staging areas. Vegetation clearing may be required at these sites to

ensure safe working conditions. The fly yards/staging areas would serve as helicopter support yards for fueling and maintenance, as well as for the transport of materials and personnel. Towers may also be assembled in sections at these yards prior to delivery to the tower sites. Heavy lift helicopters would then fly the towers from the yards to the tower sites.

Portable landing pads would be located at each tower site. These pads would allow helicopters to load and unload personnel, tools, and equipment necessary for construction of foundations and assembly of tower structures. Helicopter-constructed towers that would not be in close proximity to existing access roads would utilize micropile foundations. For each tower leg, micropile foundations would use a group of three to eight 6- to 9-inch diameter casings that would be drilled and grouted into the ground. The exposed portion of the pile group would be encased in a reinforced concrete cap from the top of the casings to a depth anywhere from one to eight feet below the ground surface, depending on the terrain.

Conductor installation would proceed in the same manner as the double-circuit tower installation. The equipment necessary for conductor installation would be large, heavy construction equipment that could only be brought in by truck. Some NFS roads could need maintenance or improvement to allow pulling and tensioning, but no new access or spur roads would be created for conductor installation on the helicopter-constructed towers. After project completion, any maintained access roads to helicopter fly yards/staging areas to would be reduced to 16 feet.

1.2.2 Addition of New 230 kV Circuit

Between the proposed Haskell Canyon Switching Station and the existing Castaic Power Plant, LADWP proposes the addition of 12 miles of a new 230 kV transmission circuit onto existing Castaic – Olive 230 kV Transmission Line structures. The circuit would cross the unincorporated communities of Castaic and Saugus and the city of Santa Clarita. A total of 300 feet of BLM-managed public lands and four miles of NFS lands would be traversed; however, the new circuit would not require a new or additional ROW. This new circuit would be called Castaic – Haskell Canyon #4 and would utilize the same conductor (bundled 715.5 kcmil "Starling" ACSS/AW [aluminum conductor steel supported/aluminum-clad steel wire]) as that proposed for the new 230 kV transmission line between Barren Ridge and Haskell Canyon Switching Stations.

The addition of a new circuit on existing towers would require many of the same construction activities associated with a new transmission line (refer to Appendix B for a description of each construction activity). However, all work would be within existing ROW and no new towers would be constructed. Some towers may need to be modified or reinforced to carry the additional weight of the new conductor. Specific towers requiring reinforcement would be determined following detailed design of the Project. Tower reinforcement would not alter the general design or the location of the structures. This process would generally include reinforced foundations or steel member replacements. Refer to Figure 1-1 for a map showing the location of the new 230 kV circuit.

1.2.3 Reconductoring of Existing Transmission Line

LADWP proposes the reconductoring of 76 miles of the existing BR-RIN 230 kV transmission line with larger conductors from the Barren Ridge Switching Station to Rinaldi Substation. Four miles of BLM-managed public lands, 13 miles of National Forest System (NFS) lands, and 44 miles of private property would be traversed. The existing conductors (954/ 2,312 kcmil) would be replaced with a new 1,433.6 kcmil "Merrimack" ACSS/TW/HS (aluminum conductor steel supported/trapezoidal wires/high strength) conductor. The new conductor would have a larger diameter that allows for greater electrical capacity.

The upgrade of the existing BR-RIN would also require many of the same activities of the new transmission line (surveying of right-of-way [ROW], rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, and cleanup). Removal of the existing conductor would be used to string a pulling line, and this line would then be used to pull in the new conductor. All work would

remain within the existing 250-foot-wide ROW, with no additional ROW required. Some of the towers would need to be modified, replaced, and/or have foundations reinforced or replaced to carry the additional weight of the new heavier conductor. Refer to Figure 1-1 for the location of the reconductoring.

1.2.4 Construction of New Switching Station

As a component of the BRRTP, LADWP proposes the construction of a new switching station in Haskell Canyon, south of the Angeles National Forest on LADWP-owned property at the convergence of several existing and proposed 230 kV transmission lines (the existing BR-RIN, the proposed double-circuit Barren Ridge – Haskell Canyon, existing Castaic – Northridge, Castaic – Sylmar, Castaic – Olive, and the proposed Castaic – Haskell Canyon). Refer to Figure 1-1 for the location of the new switching station.

The station would be approximately 500 feet by 600 feet to accommodate the necessary circuit positions, which are made up of equipment, such as steel support structures, circuit breakers, disconnect switches, and associated equipment, and a relay house and control house containing control and protective relaying equipment. The relay and control houses would each be approximately 30 feet long by 12 feet wide by 10 feet high and constructed of gray concrete block. The station yard would include a paved internal access road approximately 16 feet wide and would be enclosed by chain-link fencing with barbed-wire extension for security. The preliminary grading plan for the station is located in Appendix B.

Necessary pre-construction geotechnical investigation on-site would include six borings by a drill rig to investigate bedrock and soil stability and four cone penetration test locations after site grading to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

Construction of the new Haskell Canyon Switching Station would consist of preconstruction surveys, clearing and grading of access roads, site grading and drainage development, installation of concrete foundations and steel support structures, installation of below- and above-ground electrical conduits for equipment power and control, installation of below- and above-grade grounding conductors, and installation of control and relay houses. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks, and flatbed trailers. Cranes, man-lifts, portable welding units, line trucks, and mechanic trucks would also be required. Construction would require an estimated 12 months with approximately 60 workers.

Site preparation work for the station would involve clearing and grading of access roads, clearing of the switchyard site, the cut and fill grading of the site, and placement and compaction of structural fill that would serve as a base for switching station facilities. The site would be graded to maintain current drainage patterns as much as possible. A 16-foot-wide paved road and a 100-foot by 100-foot gravel parking area would be required. The yard would be covered with crushed-rock aggregate. Native vegetation would be re-established where possible outside the switchyard fence.

Following site grading and development, reinforced concrete foundations would be installed to support the steel structures and electrical equipment and control facilities. It is estimated that 1,500 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 180 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 120-day working period. Subsequent to the foundation installation, trenches would be dug to facilitate placement of copper conductors for the station grounding mat.

Multiple transmission lines would be terminated into the switching station (i.e., the new and existing Barren Ridge – Haskell and Castaic – Haskell Canyon transmission lines) and would need support and require the installation of galvanized steel structures. An existing 115 kV transmission line may need to

be relocated around the proposed station. High-voltage bus work consisting of aluminum jumpers and tubing would be installed within the station.

1.2.5 Expansion of Existing Switching Station

LADWP proposes expansion of the existing Barren Ridge Switching Station to the east side by 235 feet by 500 feet, for a total station size of 485 feet by 500 feet (approximately 5.6 acres). The expansion area of the station would include electrical structures and equipment for the addition of transmission lines, a material staging area, roadway within the station, and a drainage area. The preliminary design layout for the station may be found in Appendix B. Refer to Figure 1-1 for the location of the existing switching station.

Expansion of the existing switching station would be very similar to the construction of the Haskell Canyon Switching Station as described above. Expansion would consist of preconstruction surveys, site preparation and grading, installation of reinforced concrete foundations, installation of electrical conduits for equipment power and control, and installation of structures and equipment.

Necessary pre-construction geotechnical on-site investigation would include two test pits excavated by a backhoe to investigate soil density and settlement, and four cone penetration test locations on-site to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

It is estimated that 700 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 80 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 90-day working period. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks, and flatbed trailers. Cranes, man-lifts, portable-welding units, line trucks, and mechanic trucks would also be required. An estimated eight months with approximately 60 workers would be required to expand the station.

1.2.6 Project-Wide Mitigation Measures

To address potential impacts of the Proposed Project to multiple resource areas as discussed above, the following project-wide mitigation measure would be applied:

> Three-Circuit Tower Mitigation (THREE-CIRCUIT) – A three-circuit lattice tower design would be implemented as described in Section 1.2.1 of this Technical Report, at the locations shown in Figure 1-7, Three-Circuit Tower Mitigation Map.
>
> Helicopter Mitigation (HELICOPTER) – Helicopter Mitigation shall be implemented, as described in Section 1.2.1 of this Technical Report, in steep areas of the Angeles National Forest where access is limited. For Alternatives 1 and 2a, implementation would occur at the locations shown on Figure 8-2, Identified Helicopter Mitigation Map. During final design of the Project, areas other than those shown on Figure 8-2, including Alternatives 2 and 3, may potentially require helicopter construction of the towers. This determination would generally be made where tower sites have no existing access roads within 300 feet and slopes are greater than 25 percent. Final identification of these tower sites would be determined and agreed upon by USFS, BLM and LADWP.

1.2.7 Construction Work Force and Schedule

The NEPA Record of Decision and CEQA Notice of Determination (anticipated in the early part of 2012) must be made before construction could begin. Therefore, construction of the BRRTP is anticipated to

begin no sooner than summer 2012, with a target in-service date of early 2015. These dates are subject to change based on actual completion of design.

The following construction estimates were based on preliminary engineering and the number of workers and construction duration values are estimates; therefore, they are subject to change based on final engineering and design. The new double-circuit 230 kV transmission line from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station would require 12.5 months and 134 workers. The installation of a 230 kV circuit on existing double-circuit towers from the Castaic Power Plant to the proposed Haskell Canyon Switching Station would require a month and a half and 35 workers. The upgrade and reconductoring of the existing BR-RIN would require eight months and 155 workers. The construction of a new 400-foot by 600-foot Haskell Canyon Switching Station would require 12 months and 60 workers. The expansion of the existing Barren Ridge Switching Station would require eight months and 60 workers.

The BRRTP components are anticipated to be constructed in the staggered sequence illustrated below in Tables 1-1 and 1-2. The construction of all Project components would take approximately two years and 447 total workers, with 173 workers at the peak of construction. Table 1-2 summarizes the BRRTP's anticipated construction workforce and schedule based on the most current information available. To allow for any delays in the Project, three weeks of float time were included for the new 230 kV transmission line and reconductoring efforts, and an additional two weeks of float time were included for the stringing of the second circuit between Castaic Power Plant and Haskell Canyon.

TABLE 1-1. ANTICIPATED CONSTRUCTION SEQUENCE

PROJECT COMPONENT	ANTICIPATED CONSTRUCTION SEQUENCE
Expansion of Barren Ridge Switching Station	Weeks 8 – 73
New Haskell Canyon Switching Station	Weeks 1 – 67
New 230 kV Transmission Line	Weeks 42 – 113
Reconductor BR-RIN	Weeks 55 – 88
Addition of 230 kV Circuit	Weeks 51 – 56

TABLE 1-2. CONSTRUCTION WORKFORCE AND SCHEDULE

PROJECT COMPONENT	CONSTRUCTION (START AND END WEEKS)	CONSTRUCTION DURATION (MONTHS)	TOTAL # OF WORKERS	PEAK # OF WORKERS AT ANY GIVEN TIME
Expansion of Barren Ridge Switching Station	8 – 73	15	60	38
New Haskell Canyon Switching Station	1 – 67	15.4	63	38
New 230 kV Transmission Line	42 – 113	16.5	134	131
Reconductor BR-RIN	55 -88	9	155	120
Addition of 230 kV Circuit	51 – 56	1.5	35	35
ALL COMPONENTS	**Weeks 1 – 113**	**26.1 months**	**447 Total Workers**	**173* Peak Workers**

*The value represents the total for the staggered construction of the Project components; it is not reflective of the sum of all the components.

2.0 REGULATORY FRAMEWORK

Fossils are classified as non-renewable scientific resources and are protected by various laws, ordinances, regulations and standards (LORS) across the country. Professional standards for the assessment and mitigation of adverse impacts to paleontological resources have been established by the Society of Vertebrate Paleontology (SVP) (1995). Pertinent LORS are summarized and discussed below. This paleontological study was conducted in accordance with the LORS which are applicable to paleontological resources within the study area and the professional standards and guidelines established by the SVP.

2.1 FEDERAL

The American Antiquities Act of 1906 1(6 USC 431-433). Establishes a penalty for disturbing or excavating any historic or prehistoric ruin or monument or object of antiquity on federal lands has a maximum fine of $500 or 90 days in jail.

The National Environmental Policy Act of 1969, as amended (Pub. L. 91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258 § 4(b), Sept. 13, 1982). Recognizes the continuing responsibility of the Federal Government to "preserve important historic, cultural, and natural aspects of our national heritage . . ." (Sec. 101 [42 USC § 4321]) (#382).

The National Historic Preservation Act (Pub. L. 89-665; 80 Stat. 915, 16 U.S.C. 470 et seq.). Provides for the survey, recovery, and preservation of significant paleontological data when such data may be destroyed or lost due to a federal, federally licensed, or federally funded project.

The Federal Land Management and Policy Act of 1976 (43 U.S.C. 1712[c], 1732[b]); sec. 2, Federal Land Management and Policy Act of 1962 [30 U.S.C. 611]; Subpart 3631.0 et seq.), Federal Register Vol. 47, No. 159, 1982. Defines significant fossils as: unique, rare or particularly well-preserved; an unusual assemblage of common fossils; being of high scientific interest; or providing important new data concerning [1] evolutionary trends, [2] development of biological communities, [3] interaction between or among organisms, [4] unusual or spectacular circumstances in the history of life, [5] or anatomical structure.

The Paleontological Resources Preservation Act of March 2009: P.L. 111-011. First statute to preserve paleontological resources on USFS, BLM, and U.S Department of the Interior, Bureau of Reclamation (BOR) lands. This law essentially codifies collecting polices of federal land management agencies. It allows reasonable amounts of common invertebrate and plant fossils to be casually collected with negligible disturbance. In addition, it requires protection and preservation of uncommon invertebrate and plants and all vertebrate fossils, including imprints, molds, casts, etc.

Federal protection for scientifically significant paleontological resources applies to projects if any construction or other related project impacts occur on federally owned or managed lands, involve the crossing of state lines, or are federally funded.

2.2 STATE

The Guidelines for the Implementation of CEQA, as amended March 29, 1999 (Title 14, Chapter 3, California Code of Regulations: 15000 et seq.). Defines procedures, types of activities, persons, and public agencies required to comply with CEQA, and include as one of the questions to be answered in the Environmental Checklist (Section 15023, Appendix G, Section XIV, Part a) the following: "Will the proposed project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?"

Other state requirements for paleontological resource management are included in the Public Resources Code (Chapter 1.7), Section 5097.5 and 30244. These statutes prohibit the removal of any paleontological site or feature on public lands without permission of the jurisdictional agency, defines the removal of paleontological sites or features as a misdemeanor, and requires reasonable mitigation of adverse impacts to paleontological resources from developments on public (state) lands.

3.0 PROJECT AREA OVERVIEW

3.1 NATURAL ENVIRONMENT IN THE STUDY AREA

The Project study area lies in a region of complex geology that straddles a major tectonic plate boundary between the North American lithospheric plate on the northeast and the Pacific lithospheric plate on the southwest. The modern plate boundary is formed by the San Andreas Fault Zone—a zone of deformation characterized by right-lateral strike-slip faulting of continental proportions. Geologic rock units of the southwestern block have been uplifted, forming the central portion of the Transverse Ranges, while the generally undeformed rock units of the northeastern block occupy an area of relatively low relief that forms the Antelope Valley portion of the Mojave Desert. Geologically, the Mojave Desert Province is characterized by broad alluvial basins that are being filled by sediments derived from the adjacent uplands (Tehachapi Mountains and Transverse Ranges). In Antelope Valley these alluvial deposits reach a thickness of 4,000 feet and have buried an older landscape eroded into Paleozoic metamorphic and sedimentary rocks and Mesozoic plutonic igneous rocks. Cenozoic sedimentary rocks also occur in this province, but have limited surface exposure primarily adjacent to the Garlock and San Andreas fault zones. Geologically, the Transverse Ranges Province is characterized by a series of generally east-west oriented mountain ranges separated by broad alluvial-filled valleys, narrow stream canyons, and major and minor faults. Rocks exposed in this portion of the Project study area are extremely diverse in origin and composition and include Precambrian and Paleozoic metamorphic and plutonic igneous rocks; Mesozoic metamorphic, plutonic, and sedimentary rocks; and Cenozoic marine and non-marine sedimentary rocks. The Mesozoic and Cenozoic sedimentary rocks contain a rich paleontological record that preserves portions of the last 75 million years of Earth history. Certain time intervals are especially well represented including the Cretaceous-Tertiary boundary (~65 Ma), the middle and late Miocene (~17 to 5 Ma), and the Pliocene and early Pleistocene (~4 to 1 Ma).

The following is a discussion of the general geology, paleontology, and distribution of the geologic rock units (formations) underlying the Project study area (Figure 3.1). A detailed inventory of geologic rock units for every tenth of a mile along the various proposed Project alternatives is provided in Appendix A.

3.1.1 Quaternary Alluvium

General Geology: Modern drainages contain unconsolidated stream and alluvial sediments of relatively recent age deposited by the permanent or ephemeral streams that flow in them. These sediments consist primarily of gravel, sand, and silt associated with the Santa Clara River and its tributaries (Oakeshott, 1958), as well as localized drainages and alluvial fans along the southern and northeastern borders of Antelope Valley (Dibblee, 1967). These deposits are assumed to be Holocene in age (0 to 10,000 years old). Quaternary alluvium is underlain by marine to terrestrial deposits of Tertiary to Cretaceous age in the Transverse Ranges Province (Oakeshott, 1958) and by terrestrial deposits of Quaternary and Tertiary age in the Mojave Desert Province (Dibblee, 1967).

Paleontology: Any organic remains (e.g., sub-fossils) preserved within the Quaternary alluvium are too young to be considered paleontological resources, because of the recent age of these deposits and their close association with modern drainages.[1]

Distribution: Quaternary alluvium occurs over large portions of the study area including all of segments A (MP 0.0 to 13.2), B (MP 0.0 to 26.5), C (MP 0.0 to 21.7), F1 (MP 0.0 to 0.8), and F2 (MP 0.0 to 2.8), the northern portions of segments D (MP 0.0 to 16.7), E (MP 0.0 to 6.8), G (MP 0.0 to 3.7), H1 (MP 0.0 to 1.8), and I (MP 0.0 to 4.5), and minor portions of Segment H2 (MP 0.8 to 1.1 and MP 1.5 to 1.9).

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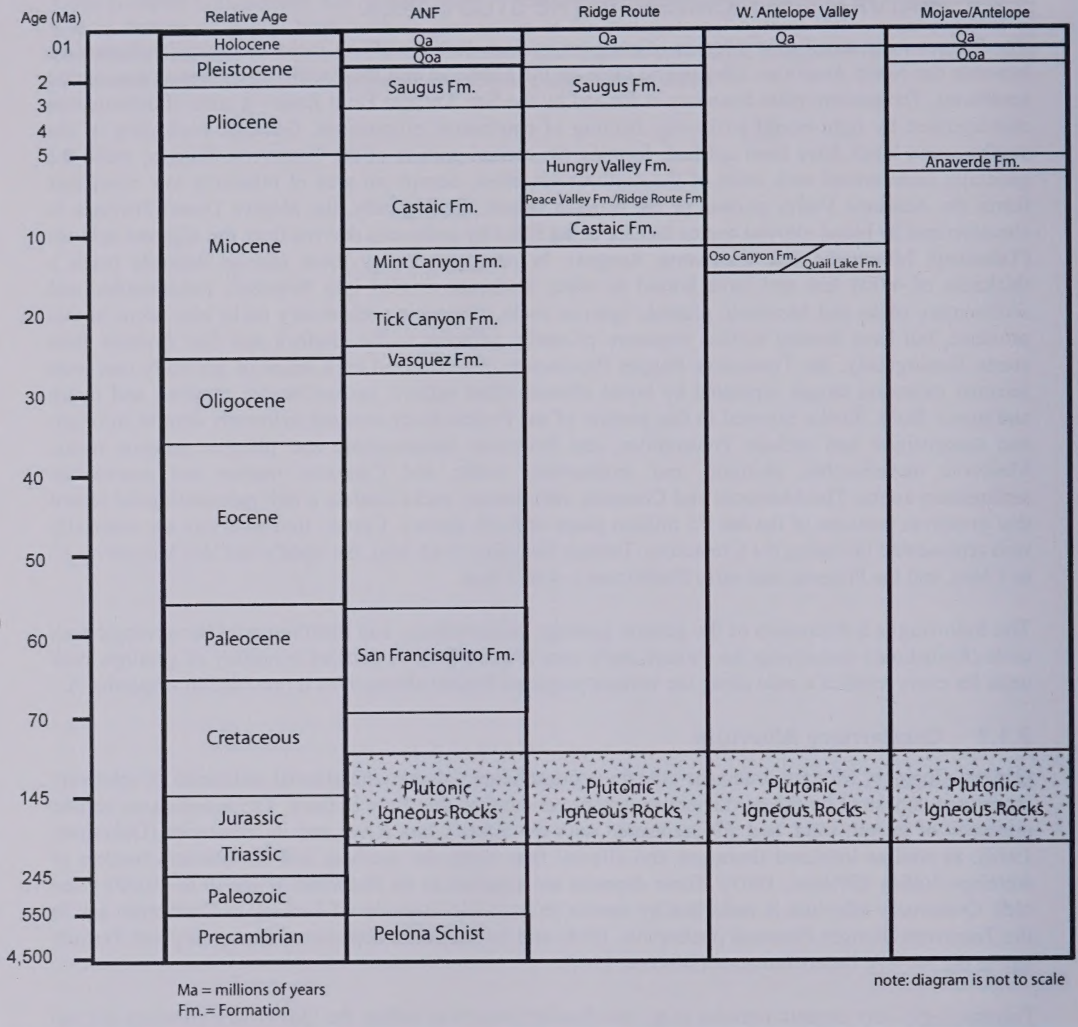
[1] Mile point

FIGURE 3-1. SUMMARY OF GEOLOGIC ROCK UNITS ALONG THE VARIOUS PROJECT ALTERNATIVES.


Age (Ma)
Relative Age
ANF
Ridge Route
W. Antelope Valley
Mojave/Antelope
.01
2
3
4
5
10
20
30
40
50
60
70
145
245
550
4,500
Holocene
Pleistocene
Pliocene
Miocene
Oligocene
Eocene
Paleocene
Cretaceous
Jurassic
Triassic
Paleozoic
Precambrian
Qa
Qoa
Saugus Fm.
Castaic Fm.
Mint Canyon Fm.
Tick Canyon Fm.
Vasquez Fm.
San Francisquito Fm.
Plutonic Igneous Rocks
Pelona Schist
Qa
Saugus Fm.
Hungry Valley Fm.
Peace Valley Fm./Ridge Route Fm
Castaic Fm.
Plutonic Igneous Rocks
Qa
Oso Canyon Fm.
Quail Lake Fm.
Plutonic Igneous Rocks
Qa
Qoa
Anaverde Fm.
Plutonic Igneous Rocks
Ma = millions of years
Fm. = Formation
note: diagram is not to scale

ANF=Angeles National Forest.

3.1.2 Older Alluvium

General Geology: Older alluvium consisting of poorly consolidated mudstones, sandstones, and cobble to boulder conglomerates deposited in ancient stream-channels and alluvial fans locally occur in the Study Area. In the Transverse Ranges the older alluvial deposits are primarily preserved as isolated, uplifted and eroded remnant terraces (Oakeshott, 1958), while in the Mojave Desert these deposits typically occur as locally faulted sequences of ancient alluvial fans (Dibblee, 1967). Older alluvial deposits vary in stratigraphic thickness from a few feet to as much as 200 feet (Oakeshott, 1958). During the windshield survey older alluvial deposits as observed in Green Valley consisted of poorly consolidated pebbly and gravelly sandstones overlying deeply weathered plutonic igneous rocks. Farther south along San Francisquito Creek localized older alluvium occurs in localized channels eroded into sedimentary rocks of the San Francisquito Formation. The geologic age of the older alluvium is not well constrained, but most likely ranges from early to late Pleistocene in age (Oakeshott, 1958).

Paleontology: Although no fossils are presently known from the older alluvium in the study area, similar deposits have produced significant remains of Pleistocene megafauna (e.g., ground sloth, mammoth, and mastodon) from sites elsewhere in Southern California (Jefferson, 1991).

Distribution: Deposits mapped as older alluvium have been mapped by Dibblee (1967) as erosional remnants of Pleistocene stream courses and alluvial fans in several portions of the study area including Segment E (MP 6.8 to 9.0), Segment G (MP 3.7 to 4.1, MP 7.8 to 8.9, MP 10.6 to 11.0, MP 16.1 to 17.6), Segment H1 (MP 1.8 to 2.3), and Segment I (MP 4.5 to 4.7, MP 8.3 to 8.8, portions of the segment between MP 14.8 and 16.0, MP 18.9 to 19.3, and MP 28.6 to 28.7).

3.1.3 Saugus Formation

General Geology: The Saugus Formation consists of 650 feet of poorly consolidated, coarse-grained sandstone and conglomerate that formed in fluvial and alluvial-fan paleoenvironments around the western end of the San Gabriel Mountains (Kew, 1924; Oakeshott, 1950, 1958). Hershey (1902) originally proposed the name "Saugus Division" for a series of alluvial deposits in Soledad Canyon near Saugus. Oakeshott (1958) later restricted the name "Saugus formation" to lower Pleistocene continental beds unconformably above the upper Pliocene Sunshine Ranch Member of the Pico Formation and lying with an angular unconformity below upper Pleistocene terrace deposits. Squires et al. (2006) continued this usage, although previous workers have placed marine deposits of the Pico Formation into the lower Saugus Formation (e.g., White, 1983; Groves, 1991a) (see White [1983] and Squires et al. [2006] for a discussion of the history of the stratigraphic nomenclature of the Pico and Saugus formations). As observed during the windshield survey, the Saugus Formation in the study area consists of flat-lying to gently dipping, non-marine strata including light red-brown, interbedded coarse-grained sandstones and pebble to cobble conglomerates. The age of the Saugus Formation is late Pliocene to early Pleistocene (~3 to 1.5 Ma). The Saugus Formation unconformably overlies different rock units depending on local geological conditions. In the Haskell Canyon area (segments G and J) the Saugus Formation overlies steeply dipping strata of the Castaic and Mint Canyon formations of Miocene age (Dibblee, 1996). Locally, the Saugus Formation is unconformably overlain by older alluvial deposits of late Pleistocene age (Oakeshott, 1958).

Paleontology: The Saugus Formation contains very fossiliferous marine deposits, as well as terrestrial deposits that locally contain fossil vertebrates. Marine fossils from the Saugus Formation include bryozoans, brachiopods, crabs, barnacles, gastropods, bivalves, echinoids, fish, and trace fossils (Eldridge and Arnold, 1907; Kew, 1924; Grant and Gale, 1931; Winterer and Durham, 1962; Squires and White, 1983; Groves, 1991a; Govean, 1993). Fossil bony fish include sheepshead (*Semicossyphus pulcher*), barracuda (*Sphyraena* sp.), and banjo fish (*Rhinobatos* sp.) (Govean, 1993). Terrestrial vertebrate fossils include terrapins, tortoises, and lizards, as well as land mammals, such as extinct rabbit, gopher, pack rat, dog, cat, mastodon, tapir, horse, peccary, camel, deer, and bison in the areas of the city of Santa Clarita and the San Fernando Valley (Winterer and Durham, 1954, 1962). Fossil land mammals have also been found elsewhere in the Saugus Formation; most notably extinct rabbit, gopher, pack rat, mammoths, horse, and llama of Irvingtonian-land-mammal age in Moorpark, California (Wagner et al., 2007).

Distribution: The Saugus Formation within the study area occurs along Segment D (MP 46.6 to 46.7, 47.3 to 47.4, and 47.5 to 47.6), Segment G (MP 19.1 to 20.9), Segment J (portions of the segment between MP 0.4 and 3.1), and Segment K (portions of the segment between MP 1.6 and 14.3).

3.1.4 Anaverde Formation

General Geology: The Anaverde Formation as exposed along the San Andreas Fault Zone in Leona Valley and Anaverde Valley consists of about 1,500 feet of terrestrial and fluvial sedimentary rocks (Wallace, 1949; Dibblee, 1967). Wallace (1949) formally named and mapped the Anaverde Formation after the Anaverde Valley and subdivided it into three distinct facies including a gray-white arkosic sandstone and cobble conglomerate facies, a gray, clay shale facies, and a diorite-clast breccia facies. The formation is locally deformed by faulting and overlies and is in fault contact with pre-Tertiary rocks (Dibblee, 1967). The Anaverde Formation is believed to be of late Miocene to early Pliocene age (~ 6 to 5 Ma) (Savage et al., 1954).

Paleontology: Fossils are rare in the Anaverde Formation (Dibblee, 1967), but include a significant fossil flora collected from the sandstone-conglomerate facies of the formation as exposed in the northwestern end of Anaverde Valley (Wallace, 1949; Axelrod, 1950). Axelrod (1950) described 21 species of fossil plants from this area (UCMP Locality P4139) including willow (*Salix*), pine (*Pinus*), aspen (*Populus*), oak (*Quercus*), laurel (*Persea*), sumac (*Rhus*), crab apple (*Peraphyllum*), kidneywood (*Eysenhardtia*), soapberry (*Sapindus*), ceanothus (*Ceanothus*), buckthorn (*Rhamnus*), sycamore (*Platanus*), and serviceberry (*Amelanchier*).

Distribution: The Anaverde Formation is confined to the San Andreas Fault Zone and occurs within the study area along Segment G (MP 5.6 to 5.9), Segment H2 (MP 1.1 to 1.5), and Segment I (MP 7.9 to 8.3).

3.1.5 Pico Formation

General Geology: The Pico Formation in the eastern Ventura Basin is characterized by up to 18,000 feet of deep water marine sedimentary rocks that grade into shallow-marine deposits near the top of the formation (Squires et al., 2006). Kew (1924) named the Pico Formation for exposures in the vicinity of Pico Canyon and described it as of marine origin and consisting of both fine-grained and coarse-grained sandstone with interbeds of conglomerate. According to Squires et al. (2006), the Pico Formation in the eastern Ventura Basin consists of middle to upper bathyal, muddy siltstone deposits that are overlain by wave-dominated-deltaic, sandstone and conglomerate deposits. Oakeshott (1958) divided the Pico Formation in the San Fernando Quadrangle into three members: the Lower Pico Member, which consists of about 700 feet of brownish siltstone, sandstone, and conglomerate that formed in a marine paleoenvironment; the Upper Pico Member, which consists of a few hundred feet of light brownish sandstone and conglomerate that formed in brackish to continental paleoenvironments; and the Sunshine Ranch Member, which consists of 1300 feet of sandy mudstone, sandstone, gravel, and conglomerate with thin white limestone beds that formed in fluvial and lacustrine paleoenvironments. Only the Sunshine Ranch Member has been mapped within the Soledad Basin (Oakeshott, 1958). The Pico Formation in the Valencia area of the Soledad Basin is late Pliocene in age (~3 Ma), based on benthic foraminifera and mollusks (Squires et al., 2006). The Pico Formation conformably overlies the marine Towsley Formation of late Miocene to Pliocene age in the Valencia area of the Soledad Basin (Squires et al., 2006). The Pico Formation is unconformably overlain by the non-marine Saugus Formation of early Pleistocene age (Oakeshott, 1958). However, in the Valencia area, the Pico Formation laterally interfingers with braided-stream deposits of the Saugus Formation (Squires et al., 2006).

Paleontology: The Pico Formation is rich with marine fossils that include abundant encrusting calcareous algae, foraminifera, sponges, marine worms, bryozoans, brachiopods, crabs, barnacles, mollusks, echinoids, sharks, bony fish, pinnipeds, and cetaceans (Eldridge and Arnold, 1907; English, 1914b; Kew, 1924; Kellogg, 1929; Grant and Gale, 1931; Winterer and Durham, 1962; Squires and White, 1983; Groves, 1991a, 1991b; Squires et al., 2006). Terrestrial fossils have also been found in the Pico Formation, such as pine (*Pinus* sp.), oak (*Quercus* sp.), bird, and small cat (Winterer and Durham, 1962; Squires et al., 2006; unpublished UCMP data).

Distribution: The Pico Formation has a very limited distribution in the study area and is confined to Segment K (MP 11.1 to 11.2).

3.1.6 Castaic Formation

General Geology: The Castaic Formation is a marine sedimentary rock unit consisting of 7000 feet of interbedded mudstone, siltstone, sandstone, and conglomerate that formed in a shallow-marine embayment northeast of the San Gabriel Fault at the eastern end of the Ventura Basin (Stanton, 1960, 1966, 1982). Crowell (1954) named the Castaic Formation for the lowest marine unit in the Ridge Basin sedimentary sequence. It is aerially restricted to the southern Ridge Basin and northwestern part of the Soledad Basin (Stanton, 1966; Cooper, 1977). As observed during the windshield survey, the Castaic Formation in the study area consists of thickly bedded gray, fine-grained sandstones interbedded with blue-gray siltstones and shales and red-brown, coarse-grained sandstones. The age of the Castaic Formation is late Miocene to early Pliocene (~6 to 5 Ma), based on benthic foraminifers (McDougall, 1982). The Castaic Formation unconformably overlies strata of the Mint Canyon, Vasquez, and San Francisquito formations (Stanton, 1982). Locally, the Castaic Formation is overlain by strata of the Towsley and Saugus formations and conformably by sedimentary rocks of the Ridge Basin Group (Stanton, 1982).

Paleontology: A diverse assemblage of fossil marine invertebrates, dominated by gastropods and bivalves, has been collected from the Castaic Formation (Skolnick and Arnal, 1959; Stanton, 1960, 1966, 1982; McDougall, 1982; Govean, 1993). Invertebrate fossils include foraminifers, sponges, bryozoans, barnacles, crustaceans, brachiopods, mollusks, and echinoids. Fossil marine vertebrates are rare, but include sharks, rays, bony fish, and marine mammals (Stanton, 1966; Welton and Link, 1982). Other fossils found in the Castaic Formation include fossil wood and leaves (Govean, 1993). During the field survey fossils were observed at several locations within strata of the Castaic Formation and included oxidized plant fragments, carbonized wood, and internal and external molds of marine mollusks.

Distribution: The Castaic Formation is well exposed within the study area and occurs along Segment D (majority of segment between MP 37.5 and 48.2), Segment H2 (MP 17.0 to 17.1), Segment I (MP 29.6 to 31.9), Segment J (majority of the segment between MP 0.0 and 12.0), and Segment K (portions of the segment between MP 0.0 and 1.6).

3.1.7 Towsley Formation

General Geology: The Towsley Formation consists of up to 4,000 feet of petroliferous marine sedimentary rocks exposed on the north slope of the Santa Susana Mountains (Winterer and Durham, 1954). In the eastern part of its area of outcrop in the Elsmere Canyon and Grapevine Canyon area, only the middle portion of the formation is preserved. Here, the Towsley Formation is about 300 feet thick and consists of a lower unit composed of siltstone, sandstone, and conglomerate and an upper unit composed of light brown siltstone and fine sandy siltstone with a thick tongue of coarse-grained sandstone and pebble conglomerate (Kern, 1973). The Towsley Formation is late Miocene to early Pliocene in age (~6 to 5 Ma) and was deposited in the easternmost portion of the Ventura Basin. The formation overlies and interfingers with the Modelo Formation of early late Miocene age and is overlain and interfingers with the Pico Formation of late Pliocene age (Winterer and Durham, 1962; Kern, 1973).

Paleontology: The Towsley Formation contains locally diverse assemblages of marine fossils that include foraminifera, bryozoans, brachiopods, marine worms, crabs, mollusks, echinoids, shark (*Isurus hastalus*), cetacean, sirenian (*Dusisiren jordani*), and walrus (*Imagotaria downsi*) (Eldridge and Arnold, 1907; English, 1914a, 1914b; Kew, 1924; Grant and Gale, 1931; Winterer and Durham, 1954, 1962; Oakeshott, 1958; Kern, 1973; Repenning and Tedford, 1977; Domning, 1978; unpublished LACM data; unpublished UCMP data). The marine deposits exposed in the Elsmere Canyon area are particularly rich in marine fossils (Kern, 1973). Fossils of marine mammals and land mammals have also been found in the Towsley Formation as exposed in Elsmere Canyon and include walrus (cf. *Pontolis* sp.) camel (cf. *Procamelus*) and tapir (English, 1914a; unpublished UCMP data).

Distribution: The Towsley Formation is only exposed along Segment K (MP 9.1 to 11.1, MP 14.3 to 14.4, and MP 15.4 to 15.5) in the study area.

3.1.8 Hungry Valley Formation

General Geology: The Hungry Valley Formation consists of up to 4,500 feet of interbedded conglomerate, sandstone, siltstone, and mudstone strata that formed in braided stream, flood plain, alluvial fan, fluvial-deltaic, and lacustrine paleoenvironments (Crowell, 1982; Link, 2003). The formation crops out in the northern portion of Ridge Basin, west and south of the San Andreas Fault and is divisible into two informal members. The lower member consists of ~3,300 feet of alternating gray, indurated sandstone and mudstone and orange to tan, coarse-grained, loosely consolidated sandstone and conglomerate with interbedded reddish and greenish mudstone. The upper member consists of ~1,300 feet of brown, massive, well indurated conglomerate containing clasts of gneiss, quartz diorite, volcanics, and marble. The Hungry Valley Formation is early Pliocene in age (~5 Ma) and overlies sedimentary rocks of the Ridge Route Formation and Peace Valley Formation. To the east the Hungry Valley Formation directly overlies crystalline basement rocks.

Paleontology: Important paleontological resources are known from the group and include fossil plants (Axelrod 1982), freshwater mollusks (Young 1982), fish (Bell 1973), and terrestrial vertebrates (Miller and Downs 1974 and Welton and Link 1982). The fossil mammal assemblage includes cat, tapir, horse, rhinoceros, llama, camel, pronghorn, elephant, and sloth.

Distribution: The Hungry Valley Formation within the study area only occurs in isolated outcrops along Segment D near the Interstate 5/ State Route 138 interchange (MP 22.4 to 22.7).

3.1.9 Ridge Route Formation

General Geology: The Ridge Route Formation was named by Clements (1929) for outcrops along the old Ridge Route between Templin Highway and Liebre Mountain (Link, 1982). As defined by Link (1982) the Ridge Route Formation consists of up to 30,000 feet of interbedded conglomeratic sandstone, sandstone, and mudstone strata that formed in alluvial fan, braided stream, and deltaic paleoenvironments (Crowell, 1982; Link, 2003). The formation crops-out throughout the eastern portion of Ridge Basin where it is well exposed in roadcuts along the Old Ridge Route. These roadcuts display well stratified sequences of northwest dipping sedimentary rocks consisting of beds of pebble to boulder conglomerate alternating with beds of white to red massive to cross-bedded sandstone. To the west five distinct sandstone and conglomerate tongues of the Ridge Route Formation extend across the basin to interfinger with coarse angular conglomerates of the Violin Breccia (Link, 1982). In ascending order these sandstone tongues include the Marple Canyon Member, Fisher Spring Member, Frenchman Flat member, Piru Gorge member, and Apple Canyon Member of the Ridge Route Formation (Link, 2003). The Ridge Route Formation also interfingers to the west with deltaic and lacustrine sandstones, mudstones, and shales of the Peace Valley Formation. Both formations are late Miocene to early Pliocene in age (~8.4 to 5 Ma) and underlie sedimentary rocks of the Hungry Valley Formation.

Paleontology: Important paleontological resources are known from the various members of the Ridge Route Formation and include fossil plants (Axelrod, 1982), freshwater ostracods (Forester and Brouwers, 1982), mollusks (Young, 1982), and fish (Bell, 1973), and terrestrial vertebrates (Miller and Downs, 1974 and Welton and Link, 1982). The land mammal fossil assemblage includes horse, rhinoceros, and ground sloth.

Distribution: The Ridge Route Formation within the study area crops-out extensively along Segment D near from the Interstate 5/ State Route 138 interchange to Castaic Lake (MP 23.0 to 30.4, MP 30.5 to 30.7, MP 30.8 to 31.9, MP 32.1 to 34.5, and MP 36.4 to 37.5).

3.1.10 Peace Valley Formation

General Geology: The Peace Valley Formation was named by Crowell (1982) for outcrops in Peace Valley along Highway 99 between Templin Highway and Hungry Valley Road (Crowell, 1982). As defined by Link (1982) and Smith (1982) the Peace Valley Formation consists of up to 16,000 feet of interbedded mudstone and shale strata with minor interbeds of sandstone, siltstone, and carbonate that formed in deltaic and lacustrine paleoenvironments (Crowell, 1982; Link, 2003). The formation crops out throughout the western portion of Ridge Basin where it is well exposed in large roadcuts along Interstate 5 south of Coyote Canyon. These roadcuts display well stratified sequences of northwest dipping sedimentary rocks consisting of beds of shale alternating with beds of massive claystone and sandstone. Five distinct shale and siltstone members of the Peace Valley Formation have been recognized that broadly interfinger to the east with the fluvial and deltaic strata of the coeval Ridge Route Formation. In ascending order these members include the Paradise Ranch Member, Osito Canyon Member, Cereza Peak Member, Posey Canyon Member, and Alamos Canyon Member of the Peace Valley Formation (Smith, 1982; Link, 2003). The Peace Valley Formation also interfingers to the west with coarse-grained alluvial fan deposits of the Violin Breccia. The Peace Valley Formations is late Miocene to early Pliocene in age (~8.4 to 5 Ma) and underlies sedimentary rocks of the Hungry Valley Formation.

Paleontology: Important paleontological resources are known from the various members of the Peace Valley Formation and include fossil plants (Axelrod, 1982), freshwater mollusks (Young, 1982) and fish (Bell, 1973; Welton and Link, 1982), and terrestrial vertebrates (Miller and Downs, 1974 and Welton and Link, 1982). The Peace Valley Formation terrestrial vertebrate fossil assemblage includes tortoise, cat, proboscidean, horse, camel, and pronghorn.

Distribution: The Peace Valley Formation within the study area crops-out in isolated patches along Segment D between Posey Canyon and Castaic Lake (MP 30.4 to 30.5, MP 30.7 to 30.8, MP 31.9 to 32.1, and MP 34.5 to 36.4).

3.1.11 Oso Canyon Formation

General Geology: The Oso Canyon Formation consists of up to 5,500 feet of interbedded fanglomerate, conglomerate, sandstone, and siltstone that formed in fluvial paleoenvironments adjacent to a shallow marine embayment (Dibblee, 1967; Crowell, 2003). The formation is exposed at the western end of the Antelope Valley, where it has been deformed by faulting associated with the San Andreas Fault Zone (Dibblee, 1967). Fanglomerates in the formation consist of poorly sorted massive beds of subrounded pebbles, cobbles and boulders derived from granitic and volcanic igneous rocks exposed in the surrounding mountains. The conglomerates, sandstones, and siltstones are well bedded and interfinger to the west with sandstones and shales of the marine Quail Lake Formation (Dibblee, 1967; Crowell, 2003). The Oso Canyon Formation is considered to be late Miocene in age (~10 Ma) based on its stratigraphic relationships with the Quail Lake Formation (Dibblee, 1967).

Paleontology: Although fossils have not been reported from the Oso Canyon Formation, its sedimentary origin and fluvial paleoenvironments indicate a strong but unproven potential for producing fossil remains.

Distribution: The Oso Canyon Formation within the study area only occurs in isolated outcrops along Segment D (MP 16.7 to 17.2 and MP 17.8 to 18.1).

3.1.12 Quail Lake Formation

General Geology: The Quail Lake Formation (Santa Margarita Formation of Wiese, 1950) consists of 1,000 feet of gray white, medium- to coarse-grained sandstones and dark brown to black thinly bedded shales that formed in nearshore marine paleoenvironments in the eastern Ventura Basin (Dibblee, 1967). Sandstones are regularly bedded and grade laterally into pebble and cobble conglomerates containing clasts of granitic and volcanic igneous composition (Crowell, 1952). To the northeast, the conglomeratic sandstones of the Quail Lake Formation grade into fluvial red and green sandstones, siltstones and fanglomerates of the Oso Canyon Formation. The Quail Lake Formation is thought to be late Miocene in age (~10 Ma) based on contained marine molluscan and echinoid fossils (Wiese, 1950; Crowell, 1952).

Paleontology: The Quail Lake Formation is one of the few marine rock units exposed in the Mojave Desert. Wiese (1950) reported molluscan fossils (osysters, scallops and moon snails) and echinoderms (sand dollars), as well as marine vertebrates (sharks) from the formation. Of special note is the common occurrence of the giant oyster, *Crassostrea titan*, a species characteristic of the Santa Margarita Formation in the San Joaquin Valley. Crowell (1952) reported similar fossils from Quail Lake Formation including additional species of marine clams and snails.

Distribution: The Quail Lake Formation in the study area is confined to the portion of Segment D adjacent to Quail Lake (MP 17.2 to 17.5).

3.1.13 Monterey/Modelo Formation

General Geology: The Monterey Formation (Modelo Formation of Oakeshott, 1958; Winterer and Durham, 1962) consists of 500 feet of tan to gray diatomaceous shale, silty shale, sandstone, and conglomerate that formed in open-marine paleoenvironments in the eastern Ventura Basin (Dibblee and Ehrenspeck, 1991). A basal, cobble conglomerate a few feet thick lies at the base of the Monterey/Modelo Formation in the Soledad Basin (Oakeshott, 1958). The majority of the remaining formation consists of fine- to coarse-grained sandstone with interbedded shale near the top of the formation (Oakeshott, 1958). The Monterey/Modelo Formation is middle to early late Miocene in age (~13 to 10 Ma) in the eastern Ventura Basin (Oakeshott, 1958). The Monterey/Modelo Formation overlies the non-marine Mint Canyon Formation of middle Miocene age and is in turn, overlain by the marine Towsley Formation of late Miocene to early Pliocene age (Oakeshott, 1958).

Paleontology: The Monterey/Modelo Formation in the eastern part of the Ventura Basin, as well as in the Soledad, and Los Angeles basins contains locally abundant marine fossils including foraminifers, bivalve mollusks (e.g., *Delectopecten* sp.), gastropod mollusks, echinoids, fish, and cetaceans (*Mixocetus elysius*, *Pithanodelphis nasalis*) (Kellogg, 1934; Daviess, 1942; Winterer and Durham, 1962; Bussino and Barnes, 1984; Barnes, 1985). Land vertebrates, such as birds (*Phalacrocorax femoralis*), have also been recovered from this rock unit in the study area (Miller, 1929).

Distribution: The Monterey/Modelo Formation in the study area is confined to the southern terminus of Segment K (MP 14.4 to 15.4).

3.1.14 Mint Canyon Formation

General Geology: The Mint Canyon Formation consists of 4,500 feet of claystone, siltstone, conglomeratic sandstone, conglomerate, and sedimentary breccia that formed in deltaic, fluvial, and lacustrine paleoenvironments (Oakeshott, 1950, 1958; Winterer and Durham, 1962; Hall, 2007; Kew, 1923). The formation is divided into a “Lower variegated member” and an “Upper gray member” that both contain vertebrate faunas of different ages (Durham et al., 1954). Sediments in the Mint Canyon Formation were derived from the Sierra Pelona, San Gabriel Mountains, and Mojave Desert and deposited in broad valleys, flood plains, and small intermittent lakes across folded and faulted strata of the Vasquez Formation and the marginal crystalline rocks of the Soledad Basin (Oakeshott, 1958). Although the Mint

Canyon Formation is only present within the eastern Ventura and Soledad basins, the same clast types within the Caliente Formation indicate that the latter formation should be considered a part of the Mint Canyon Formation. This interpretation suggests that the Caliente Formation has been offset from the Mint Canyon Formation by at least 70 km of right-lateral displacement along the San Gabriel Fault (Ehlert, 2003). As observed during the field survey, the Mint Canyon Formation in the study area consists of thickly interbedded, light gray to pinkish strata including pebble conglomerates, coarse-grained pebbly sandstones, and massive sandy siltstones. The Mint Canyon Formation is most likely middle to late Miocene in age (14 to 11 Ma), based on fossil land mammals that indicate Barstovian to Clarendonian North American land mammal ages. The Mint Canyon Formation unconformably overlies strata of the non-marine Tick Canyon Formation of early Miocene age. It is unconformably overlain by the marine Monterey/Modelo Formation of middle to early late Miocene age (Oakeshott, 1958), the Castaic Formation of late Miocene to early Pliocene age (Dibblee, 1996a), and the Saugus Formation of late Pliocene to early Pleistocene age (Dibblee, 1996b).

Paleontology: The Mint Canyon Formation has produced large and diverse fossil assemblages of plants (Axelrod, 1940; Mount, 1971), freshwater mollusks and ostracods (Kew, 1924; Oakeshott, 1958; Mount, 1971), turtle (*Clemmys* sp.; Maxson, 1930), and land mammals that include rabbit, dog, peccary (*Prosthennops* sp.), rhinoceros, camel (*Alticamulus* sp.), pronghorn antelope (*Merycodus necatus*), three genera of horse (*Merychippus intermontanus*, *M. sumani*, *Protohippus* sp., *Hipparion mohavense*, *Pliohippus* sp. cf. *P. fossulatus*), and mastodon (Kew, 1924; Maxson, 1928, 1930; Stirton, 1933, 1939; Savage et al., 1954; Kelly, 1998). Thin lacustrine and fluviatile interbeds contain freshwater gastropods (*Paludestrina imitator*, cf. *Helminthoglypta* sp.), bivalves (*Amnicola* sp.), and ostracods (Kew, 1924; Oakeshott, 1958; Mount, 1971). Local tuff beds contain fossil leaves that represent an oak-savanna community whose nearest related modern equivalent species now occur in southern California, southern Arizona, and northern Mexico (Axelrod, 1940; Wallace, 1940). These fossil leaves were derived from at least four habitats: lake-border and riparian, savanna, woodland, and chaparral (Axelrod, 1940). Although no fossils were observed in Mint Canyon Formation strata during the field survey, the results of the record search indicate several recorded fossil collecting localities (LACM and UCMP) in the Vasquez and Bouquet canyon portions of the study area.

Distribution: The Mint Canyon Formation within the study area occurs along Segment D (MP 47.4 to 47.5 and MP 47.6 to 47.8), Segment G (MP 20.8 to 21.2), Segment H2 (MP 15.4 to 17.0), Segment I (portions of the Segment between MP 24.6 and 31.6), Segment J (MP 0.2 to 0.6), and Segment K (MP 0.2 to 1.1).

3.1.15 Tick Canyon Formation

General Geology: The Tick Canyon Formation consists of 600 feet of reddish sandstone, siltstone, and claystone, as well as gray, tan, and reddish conglomerate that formed in fluvial and lacustrine paleoenvironments (Oakeshott, 1958). Jahns (1939) designated the lowest few hundred feet of the Mint Canyon Formation as the "Tick Canyon Formation" on the basis of a fossil vertebrate fauna that was distinctly older than the faunas of the overlying Mint Canyon strata. The base of the Tick Canyon Formation consists of 100 feet of grayish to brown fanglomerate that contains poorly sorted and loosely consolidated fragments of various sizes of up to a foot or more in diameter (Oakeshott, 1958). Most of the clasts consist of granite, vasquez-like basalt, and anorthosite (Oakeshott, 1958). The basal fanglomerate is overlain by reddish sandstone, mudstone, and siltstone with some interbedded yellowish and green siltstone and thin interbeds of conglomerate (Oakeshott, 1958). As observed during the windshield survey, the Tick Canyon Formation in the study area consists of pinkish red sandstones and siltstones. The Tick Canyon Formation is mostly early Miocene in age (late Arikareean to Hemingfordian North American land mammal ages; 24.15 to 15.90 Ma), based on the fossil land mammals (Hall, 2007). The Tick Canyon Formation unconformably overlies the non-marine Vasquez Formation of Oligocene to early Miocene age and is unconformably overlain by the non-marine Mint Canyon Formation of middle Miocene age (Jahns, 1939).

Paleontology: Fossils are rare in the Tick Canyon Formation, but include important land mammal fossils, such as heteromyid rodents, rabbits (*Archaeolagus acaricolus*), slender-limbed oreodonts (*Merychyus calaminthus*), camelids (*Miolabis californicus*), and horses (*Parahippus maxsoni*) (Jahns, 1939, 1940; Reeder, 1960; Whistler, 1967). A fossil hawk (*Miohierax stocki*) has also been recovered from strata of the Tick Canyon Formation (Howard, 1944). Although no fossils were observed in Tick Canyon Formation strata during the windshield survey, the results of the record search indicate several recorded fossil collecting localities (LACM) in the Vasquez Canyon portion of the study area.

Distribution: The Tick Canyon Formation within the study area only occurs along Segment I (MP 24.4 to 24.6).

3.1.16 Vasquez Formation

General Geology: The Vasquez Formation consists of 8,800 feet of terrestrial sedimentary and volcanic rocks of Oligocene to early Miocene age (Oakeshott, 1958; Dibblee, 1967; Hendrix and Ingersoll, 1987). Sharp (1936) named and described these rocks as the "Vasquez series," after the very prominent outcrops at Vasquez Rock in Aqua Dulce. The Vasquez Formation represents both the earliest and the thickest sedimentary accumulation within the Tertiary Soledad Basin (Hendrix and Ingersoll, 1987; Hendrix, 1993). Included sedimentary rocks consist of interbedded sandstones, shales, mudstones, siltstones, breccias, and conglomerates deposited in alluvial fan, fluvial, and lacustrine paleoenvironments (Oakeshott, 1958; Hendrix and Ingersoll, 1987; Hall, 2007). Very coarse-grained clastic sediments, with marked angularity of grains, and indistinct bedding, locally derived from the underlying crystalline rocks, make up a large part of the formation; although well-bedded, indurated, coarse-grained sandstone and thin bedded, lake-deposited shale and siltstone are locally prominent (Oakeshott, 1958). The base of the Vasquez Formation consists of about 40 feet of reddish-brown conglomerate. The basal conglomerate is overlain by about 400 feet of reddish-brown, coarse-gained sandstone with shale interbeds and minor lenses of conglomerate (Oakeshott, 1958). These strata are overlain by about 60 feet of very coarse fanglomerate, which in turn is overlain by up to 3800 feet of basalt flows and sills. The basalt flows are overlain by 4,500 feet of coarse-grained sandstone with conglomerate and shale interbeds (Oakeshott, 1958). The formation also contains volcanic flows of black and reddish vesicular basalt and andesite, beds of purplish breccia, and minor beds of lithic tuff (Oakeshott, 1958). The Vasquez Formation was mildly folded, faulted, and eroded before sedimentary rocks of the overlying Tick Canyon Formation were deposited (Oakeshott, 1958). As observed during the windshield survey, the Vasquez Formation in the study area consists of deep purplish red, very well indurated, coarse-grained sandstones and pebble conglomerates. Radiometric dates from basalt flows provide an age of 25.6 to 23.6 Ma (late Oligocene to early Miocene), which is consistent with biochronological age estimates based on rare land mammal fossils (Arikareean to Hemingfordian; 29 to 22.5 Ma) (Hall, 2007). The Vasquez Formation nonconformably overlies anorthosite and gneiss of Precambrian age and is unconformably overlain by the non-marine Tick Canyon Formation of early Miocene age.

Paleontology: Fossils are extremely rare in the Vasquez Formation; but, according to Hall (2007), at least one fossil of the extinct horse *Merychippus* has been found in the formation. However, no reports were found of this purported discovery in the peer-reviewed literature. No fossils were observed in exposures of this rock unit during the windshield survey and there are no recorded fossil collecting localities reported from this rock unit in the institutional record search.

General Geology: The Vasquez Formation within the study area only occurs along Segment G (MP 13.8 to 13.9).

3.1.17 San Francisquito Formation

Introduction: The San Francisquito Formation consists of over 13,000 feet of shale, sandstone, and conglomerate that formed in a variety of marine settings including sandy intertidal, subtidal, continental shelf, slope, and submarine-fan paleoenvironments (Johnson, 1952; Dibblee, 1967; Kooser, 1980, 1982;

Kirby, 1991). Dibblee (1967) formally named, described, and mapped the San Francisquito Formation based on good exposures of this rock unit in San Francisquito Canyon. Sage (1975), Kooser (1980, 1982), and Kirby (1991) later provided more detailed stratigraphic descriptions of the San Francisquito Formation. As observed during the windshield survey, the San Francisquito Formation in the study area consists of well indurated, light gray to brown, medium-grained, gravelly sandstones, as well as interbedded sequences of thinly bedded fine-grained sandstones and shales. The San Francisquito Formation ranges in age from late Cretaceous (Maastrichtian, ~70 Ma) to Paleocene (~60 Ma) (Kooser, 1980, 1982; Saul, 1983; Kirby, 1991). Kirby (1991) determined that the San Francisquito Formation is conformable across the Cretaceous/Tertiary boundary at Warm Springs Mountain. The San Francisquito Formation nonconformably overlies granodiorite and gneiss of Mesozoic age and locally is unconformably overlain by strata of the Vasquez Formation, the Mint Canyon Formation, and/or the Castaic Formation.

Paleontology: The San Francisquito Formation in the San Francisquito Canyon area contains very diverse fossil assemblages of shallow-marine invertebrate fossils, which includes corals, brachiopods, gastropods, bivalves, ammonites (*Diplomoceras* sp.), and sharks (Dickerson, 1914; Kooser, 1980, 1982; Saul, 1983; Popenoe and Saul, 1987; Squires et al., 1989; Kirby, 1991; Kirby and Saul, 1995; Squires and Saul, 2006, 2007). Elsewhere in southern California, near Cajon Pass, a fossil plesiosaur has been found in the San Francisquito Formation (Kooser, 1985; Lucas and Reynolds, 1993). During the windshield survey trace fossils were observed at several locations within strata of the San Francisquito Formation and included cylindrical burrows made by infaunal marine invertebrates. The institutional record search found numerous recorded fossil collecting localities (LACM) in the Study Area.

Distribution: The San Francisquito Formation within the study area only occurs along Segment G (MP 12.4 to 13.8).

3.1.18 Plutonic Igneous Rocks

General Geology: Plutonic igneous rocks of Mesozoic and Paleozoic age occur in several areas in the western San Gabriel Mountains region. Plutonic rocks in the study area include granodiorite and granite. The granodiorite consists of gray, medium- to coarse-grained plutonic rocks with closely related variants ranging from quartz diorite to granite (Oakeshott, 1958). The granitic rocks consist predominantly of tan to pink, fine- to medium-grained, biotite-muscovite granite with certain portions porphyritic, others pegmatitic and aplitic, and much of it gneissoid (Oakeshott, 1958). These rocks probably underlie the entire Soledad Basin north and northwest of the Soledad and Pole Canyon fault zones (Oakeshott, 1958). The plutonic rocks in the study area are believed to be related to and essentially correlative with similar rocks of late Jurassic to Cretaceous age elsewhere in the Transverse and Peninsular ranges, the Mojave Desert, and the Sierra Nevada mountain range (Oakeshott, 1958).

Paleontology: Because of the extremely high temperatures and pressures associated with the magmatic origin of the plutonic igneous rocks in the study area, no fossils are expected in these rocks.

Distribution: Plutonic igneous rocks within the study area occur along Segment G (major portions of the Segment between MP 4.2 and 11.8), Segment H1 (MP 2.2 to 2.6), Segment H2 (MP 1.9 to 5.4), and Segment I (MP 4.7 to 5.1, MP 18.4 to 18.9, and MP 19.3 to 21.5).

3.1.19 Mendenhall Gneiss

General Geology: The Mendenhall Gneiss is a blue, quartz-feldspar-rich gneiss that has been intruded by anorthosite-gabbro rocks, all of Precambrian age (Oakeshott, 1958). Oakeshott (1958) named and described the Mendenhall Gneiss after the Mendenhall Peak, where it is well exposed. It is overlain nonconformably by the Mint Canyon Formation of early Miocene age in Sand Canyon (Oakeshott, 1958).

Paleontology: No fossils are expected in the gneiss because of the extreme temperatures and pressures associated with the metamorphic origin of these rocks.

Distribution: Rocks mapped as gneiss occur along Segment G (MP 6.4 to 7.7, MP 10.7 to 10.9, and MP 11.8 to 12.3) and Segment I (MP 18.2 to 18.4 and MP 21.5 to 24.4).

3.1.20 Pelona Schist

General Geology: The Pelona Schist is primarily composed of about 7,500 feet of bluish-gray schist that was metamorphosed from clastic and pryoclastic sedimentary rocks (Muehlberger and Stanton Hill, 1958; Oakeshott, 1958; Dibblee, 1967). Hershey (1902) named and described the metamorphic rocks that crop out along the Sierra Pelona Ridge as the "Pelona schist series" (Oakeshott, 1958). The most common rock types include greenish-gray mica-chlorite-albite schist, green actinolite-albite schist with albite porphyroblasts, quartz-biotite schist, quartzite, and actinolite-talc schist (Oakeshott, 1958). These rocks are strongly foliated and contain minerals that are characteristic of the low temperature green-schist facies of metamorphism (Oakeshott, 1958). The Pelona Schist is Precambrian in age (Muehlberger and Stanton Hill, 1958).

Paleontology: No fossils are expected in the Pelona Schist because of the extreme temperatures and pressures associated with the metamorphic history of these rocks.

Distribution: Outcrops of the Pelona Schist occur occur over large portions of Segment G (MP 5.1 to 5.4, MP 14.0-16.1, and MP 17.6 to 19.2), Segment H2 (MP 0.1 to 0.8 and MP 5.4 to 15.4), and Segment I (MP 5.1 to 7.8, 8.4 to 14.8, and 15.0 to 18.2).

4.0 INVENTORY METHODS

The goal of the paleontological resources inventory was to identify, describe, and map existing paleontological resources within the study area and to evaluate the level of resource significance for each. The inventory relied on a review of relevant published geologic reports (Kew, 1924; Dibblee, 1967; and Crowell, 2003), privately published geologic mapping from the Dibblee Foundation (Dibblee and Ehrenspeck 1991, 1996a. 1996b, 1996c, 1997a, 1997b, 1997c; and Dibblee and Minch, 2002); unpublished environmental technical reports (Hulbert, 2004), and museum paleontological site records (Natural History Museum of Los Angeles County, Invertebrate Paleontology Section-LACMIP, San Diego Natural History Museum-SDNHM, and University of California, Museum of Paleontology-UCMP). This approach was followed in recognition of the direct relationship between paleontological resources and the geologic formations within which they occur. Knowing the geology of a particular area and the documented fossil productivity of the formations occurring in that area, it is possible to make reasonable predictions about where fossils will, or will not, be encountered.

The results of the literature, institutional record, and field survey portions of the inventory were incorporated with GIS layers of Project milepost delineations to estimate the linear coverage of individual geologic formations along specific Project segments. These data were then summarized in a paleontological resource table (Appendix A). Following this, paleontological resource sensitivity values were determined for each formation and the relative resource value of each Project segment quantified based on the linear distribution (i.e., mileage) as summarized in Appendix A.

Windshield surveys were conducted during September and October 2008 along the southern portion of the study area (segments F, G, H, and I, as well as portions of B, E, and K) to verify geologic mapping and results of the literature and previous institutional record surveys. The survey was primarily conducted along LADWP access roads, but also involved some portions of public roads. During the survey work, selected bedrock outcrops were examined to determine paleontological sensitivity of geologic rock units occurring in the study area.

The proposed BRRTP area of potential physical disturbance is defined as land within 250 feet of the assumed centerlines of proposed and existing transmission lines; land likely to be disturbed during construction of the new Haskell Canyon Switching Station; plus ancillary areas. Ancillary areas, most of which have not yet been defined, include, but are not limited to, staging areas, access and spur roads, and pulling and tensioning sites.

5.0 AFFECTED ENVIRONMENT

The affected environment as it pertains to paleontological resources includes not only actual fossil remains collected at specific locations, but also the collecting localities themselves, as well as the geologic formations containing those localities. In this light, a particular geologic rock unit (i.e., formation) can be considered to represent a proxy for all possible paleontological resources (i.e., fossils) entombed and preserved in that formation. Further, although fossils may not have been previously collected from a geologic formation in a given area, the fact that fossils have been recovered from that same formation in other areas where it crops-out is taken as an indication of the potential of that formation to preserve similar fossils wherever it occurs.

6.0 IMPACT ASSESSMENT

Environmental impacts can be positive (beneficial) or negative (adverse) as a primary result of an action (direct) or as a secondary result of an action (indirect), and can be permanent or long-lasting (long-term), or temporary and of short duration (short-term). Impacts can vary in degree or magnitude from no change, to slightly discernible change, to a complete change in the environmental condition or system (intensity). Impact significance is determined by judging whether the action exceeds specific thresholds.

For paleontological resources, earthwork operations (e.g., mass grading, trenching, and boreholes) that cut into sedimentary rock units containing, or potentially containing, fossils would impact those same fossils as they are unearthed. These excavation-related direct impacts can be beneficial by creating short-term opportunities to recover previously buried and undiscovered fossils. Conversely, these impacts can be adverse by causing the permanent destruction of the same previously buried and undiscovered fossils. Impact magnitude is directly correlated with the scale of the proposed earthwork (e.g., large scale mass grading operations to construct the new switching station will create a permanent and complete change to a fossil-bearing stratum [rock layer] that is graded away, while small scale and very localized footing boreholes would create a permanent but slight change to a fossil-bearing stratum that is being bored through). Construction of new access roads has the possibility to create indirect beneficial impacts by increasing access for paleontologists to previously unexplored areas where new fossil discoveries can be made. On the other hand, these same access roads can create indirect adverse impacts by increasing opportunities for unregulated “pot hunting” of potentially significant paleontological resources.

6.1 SIGNIFICANCE CRITERIA

The proposed Project has been evaluated with respect to its potential impacts on paleontological resources. Paleontological resources that may be affected by construction of the BRRTP are confined to those geologic rock units consisting of sedimentary rocks of late Mesozoic and Cenozoic age. Assessment of the significance of potential Project impacts on these resources is based on the resource sensitivity of individual rock units as well as the proposed action (e.g., grading of new access roads vs. rehabilitation of existing access roads; excavation of building pads for the new switching station vs. rehabilitation of the existing switching station; excavation of foundation pads for new transmission structures vs. reconductoring of existing structures; and excavation of new pulling stations vs. passive suspension of transmission lines between adjacent transmission structures).

Impact or ground disturbance has been modeled for the BRRTP using a series of Ground Disturbance Categories (GDC) that include the following: GDC 1 – ground disturbance associated with use of existing improved roads or agricultural land; GDC 2 – ground disturbance associated with use of existing access roads that require improvements; GDC 3 - ground disturbance associated with construction of a new road on flat terrain (0-10% slope); GDC 4 - ground disturbance associated with construction of a new access road on sloping terrain (10-20% slope); GDC 5 - ground disturbance associated with construction of a new access road on steep terrain (20-30% slope); GDC 6 - ground disturbance associated with construction of a new access road on very steep terrain (>30% slope); and GDC H - ground disturbance associated with use of helicopters to supply construction crews and transport tower components (see Appendix A).

6.2 SENSITIVITY VALUES

The following levels of paleontological resource sensitivity are rated for individual formations and recognize the important relationship between fossils and the geologic formations within which they are entombed. These sensitivity values are summarized for each Project segment in Appendix A.

Maximum Sensitivity: Maximum sensitivity is assigned to geologic formations known to contain paleontological localities with rare, well-preserved, critical fossil materials for stratigraphic or paleoenvironmental interpretation, and fossils providing important information about the paleobiology and evolutionary history (phylogeny) of animal and plant groups. Generally speaking, highly sensitive formations produce vertebrate fossil remains or are considered to have the potential to produce such remains. The following rock units known to occur within the study area are assigned a maximum paleontological resource sensitivity:

- Saugus Formation
- Anaverde Formation
- Pico Formation
- Hungry Valley Formation
- Peace Valley Formation
- Ridge Route Formation
- Castaic Formation
- Quail Lake Formation
- Towsley Formation
- Monterey/ Modelo Formation
- Mint Canyon Formation
- Tick Canyon Formation
- San Francisquito Formation

Major/Undetermined Sensitivity: Major/undetermined sensitivity is assigned to geologic formations known to contain paleontological localities with moderately well- to poorly-preserved, common elsewhere, or stratigraphically long-ranging fossil material. The major sensitivity category is also applied to geologic formations that are judged to have a strong, but unproven potential for producing important fossil remains. The following rock units known to occur within the study area are assigned a major/undetermined paleontological resource sensitivity:

- Older alluvium
- Oso Canyon Formation
- Vasquez Formation

Minor Sensitivity: Minor sensitivity is assigned to geologic formations that, based on their relatively youthful age and/or high-energy depositional history, are judged unlikely to produce important fossil remains. Typically, minor sensitivity formations produce poorly-preserved invertebrate fossil remains in low abundance. Due to the young age and oxidized nature of the Quaternary alluvial deposits mapped within the study area, these surficial sedimentary deposits are considered to have little potential to yield scientifically significant fossils and are assigned a minor resource sensitivity.

Zero Sensitivity: Zero sensitivity is assigned to geologic formations that are entirely igneous in origin or have undergone high grade metamorphism, and therefore have no potential for producing fossil remains. The following rock units known to occur within the study area have no paleontological resource sensitivity:

- Plutonic igneous rocks
- Gneissic rocks
- Pelona Schist

6.3 IMPACT LEVELS

The following definitions have been provided regarding significance criteria used for evaluation of impacts to paleontological resources. Significance is defined as a measure of probable adverse response of a resource to direct and indirect impacts associated with the construction, operation, and maintenance of Project components. It is important to emphasize that determination of impact significance considers both the resource sensitivity of an area as well as the level of ground disturbance proposed for that area. For paleontological resources, these factors are summarized below in Table 6-1, which categorizes initial impacts as either high, moderate, or low, based upon the following general characteristics.

High – A high level of impact to paleontological resources would result if the construction, operation, or maintenance of the proposed Project would cause a significant or substantial ground disturbance (GDC 4 and greater) or other adverse change to paleontological resources defined as having maximum sensitivity.

Moderate – A moderate impact to paleontological resources would result if the construction, operation, or maintenance of the proposed Project would potentially cause ground disturbance (GDC 3 or greater) or other adverse change to the condition of paleontological resources defined as having major/undetermined sensitivity. Moderate impacts would also occur where construction, operation, or maintenance of the proposed Project would result in minor or minimal ground disturbance (GDCs 2 and 3) or other adverse change at or near paleontological resources defined as maximum sensitivity.

Low –A low impact to paleontological resources would result if the construction, operation, or maintenance of the proposed Project would potentially cause any amount of ground disturbance or other adverse changes to paleontological resources that have been defined as having minor sensitivity.

No Identifiable Impact - No identifiable impact would be indicated where no measurable or suspected adverse impact would occur to any paleontological resources. These include areas that are underlain by igneous or metamorphic rock units.

TABLE 6-1. IMPACT MATRIX COMPARING PALEONTOLOGICAL RESOURCE SENSITIVITY AND GROUND DISTURBANCE.

	Ground Disturbance Categories						
Resource Sensitivity	1	2	3	4	5	6	H
Maximum	Low	Moderate	Moderate	High	High	High	High
Major/Undetermined	Low	Low	Moderate	Moderate	Moderate	Moderate	Moderate
Minor	Low	Low	Low	Low	Low	Low	Low
Zero	No	No	No	No	No	No	No

6.4 MITIGATION PLANNING

As summarized above and itemized in Table 6-1, construction of the Project would result in high and moderate levels of impact to paleontological resources with Major/Undetermined and Maximum resource sensitivity. These significant initial impacts can be reduced to a low residual level through the sequential implementation of the following mitigation measures:

PR-1: A qualified paleontologist/principal investigator shall be retained by LADWP to develop and implement a paleontological resource mitigation plan (PMTP). A qualified paleontologist is defined as an individual with a MS or Ph.D. in paleontology or geology who is experienced with paleontological procedures and techniques, who is knowledgeable in the geology and paleontology of the Project area, and who has worked as a paleontological mitigation project supervisor for at least one year. The qualified paleontologist shall attend relevant pre-construction meetings to consult with grading and excavation contractors concerning excavation schedules, paleontological field techniques, and safety issues. The PMTP shall be based on Society of Vertebrate Paleontology (SVP) guidelines and meet all regulatory requirements. The PMTP shall identify construction impact areas of major/undetermined to maximum sensitivity for encountering significant resources and the depths at which those resources are likely to be encountered. Preconstruction surveys of these areas shall be conducted prior to commencement of construction activities. The PMTP shall outline a coordination strategy to ensure that a qualified paleontological monitor would conduct full-time monitoring of all ground disturbance in sedimentary rocks determined to have a major/undetermined to maximum sensitivity. Sedimentary rocks of low, marginal, and undetermined sensitivity shall be monitored on a part-time basis (as determined by the qualified paleontologist). Geologic rock units with zero sensitivity would not require paleontological monitoring. The PMTP shall detail the significance criteria to be used to determine which resources would be avoided or recovered for their data potential. The PMTP shall also detail methods of recovery, preparation and analysis of specimens, final curation of specimens at a federally accredited repository, data analysis, and reporting. The PMTP shall specify that all paleontological work undertaken by the Applicant on public land shall be carried out by qualified paleontologists with the appropriate current permits, including, but not limited to a Paleontological Resources Use Permit (for work on public lands administered by BLM). Notices to proceed would be issued by the BLM, CPUC, and other agencies with jurisdiction, following approval of the PMTP.

PR-2: A paleontological monitor shall be retained on a full-time basis to monitor Project-related construction excavations (e.g., road grading, switching station mass grading, and tower footing boreholes and pad construction) in areas underlain by paleontological resources of maximum and major sensitivity. Project-related construction excavations in areas underlain by paleontological resources of undetermined sensitivity shall be monitored on a part-time basis, while Project-related construction excavations in areas underlain by paleontological resources of minor or zero sensitivity would not require any monitoring. A qualified paleontological monitor shall have a B.S. in geology or paleontology and have at least one year experience in the collection and salvage of fossil materials. The paleontological monitor shall work under the direction of the qualified paleontologist.

PR-3: Prior to the initiation of construction or ground-disturbing activities, all construction personnel shall be trained regarding the recognition of possible subsurface paleontological resources and protection of all paleontological resources during construction. Training shall inform all construction personnel of the procedures to be followed upon the discovery of paleontological resources. All personnel shall be instructed that unauthorized collection or disturbance of protected fossils on or off the right-of-way will not be allowed.

PR-4: When fossils are discovered, the qualified paleontologist (or paleontological monitor) shall recover them. In most cases fossil salvage activities can be completed in a short period of time. However, some fossil specimens (such as a complete large mammal skeleton) may require an extended salvage period. In these instances the paleontologist shall be allowed to temporarily direct, divert, or halt earthwork to allow recovery of fossil remains in a timely manner. At each fossil discovery site field data forms shall be prepared to document the geographic, geologic, stratigraphic, and taphonomic aspects of the discovery. Because of the potential for the recovering of small fossil remains, such as isolated mammal teeth, as determined by a qualified paleontologist, it may be necessary to collect bulk samples (up to 6,000 pounds) of sedimentary rock matrix. This bulk matrix sample shall then be tested by screenwashing a 200 pound subsample to determine the presence and relative abundance of identifiable microfossils. If positive results are obtained, the entire sample shall be screenwashed.

PR-5: To the extent feasible, fossil remains collected during monitoring and salvage shall be cleaned, repaired, sorted, and cataloged as part of the mitigation program. Prepared fossils, along with copies of all pertinent field notes, photos, and maps, shall be deposited in a federally accredited repository for both vertebrate and invertebrate fossils such as the Natural History Museum of Los Angeles County or the Museum of Paleontology at the University of California, Berkeley. Funds for curation will be the responsibility of LADWP. The Project qualified paleontologist shall be authorized to submit fossils with accompanying deeds of gift for curation on behalf of LADWP. Donation of the fossils shall be accompanied by financial support for initial specimen storage (costs vary for individual institutions). A final summary report shall be completed that outlines the results of the mitigation program. This report shall include discussions of the methods used, stratigraphic section(s) exposed, fossils collected, and significance of recovered fossils.

7.0 IMPACT RESULTS

Table 7.1 summarize the ROW mileage for initial impacts and paleontological resource sensitivity in regards to the Project components (new 230 kV transmission line [segments], new 230 kV circuit, reconductoring of the existing transmission line, new switching station, and expansion of existing switching station) and land management agency (BLM, NFS) and will be discussed further in the following sections.

7.1 NEW 230 KV TRANSMISSION LINE

7.1.1 Segment A

Construction of the new 230 kV transmission line along Segment A would traverse 13.2 miles of sedimentary deposits of Quaternary alluvium. Because these deposits accumulated relatively recently, they are defined as having only minor sensitivity; impacts are not significant and would not require mitigation.

7.1.2 Segment B

Construction of the new 230 kV transmission line along Segment B would traverse 26.5 miles of sedimentary deposits of Quaternary alluvium. Because these deposits accumulated relatively recently, they are defined as having only minor sensitivity; impacts are not significant and would not require mitigation.

7.1.3 Segment C

Construction of the new 230 kV transmission line along Segment C would traverse 21.7 miles of sedimentary deposits of Quaternary alluvium. Because these deposits accumulated relatively recently, they are defined as having only minor sensitivity; impacts are not significant and would not require mitigation.

7.1.4 Segment D

Construction of the new 230 kV transmission line along Segment D would traverse 43 miles of sedimentary deposits defined as having minor, major/undetermined, and maximum sensitivity (see Table 7.1 and Appendix A). In addition, 0.9 of a mile of this segment crosses areas underlain by plutonic igneous rocks with zero resource sensitivity. 21.3 miles of Segment D traverse sedimentary deposits of Quaternary alluvium. Because these deposits accumulated relatively recently, they are defined as having only minor sensitivity; impacts are not significant and would not require mitigation. 1.1 miles of this segment cross sedimentary deposits of the Oso Canyon Formation. This rock unit was deposited during the late Miocene (~10 Ma) and, although not proven to contain fossils, its sedimentary origin and fluvial paleoenvironments indicate a strong but unproven (i.e., undetermined) potential for producing fossil remains. Ground disturbance estimates for these areas of undetermined sensitivity are only levels 1 and 2, indicating low initial impacts and thus not requiring mitigation. 20.6 miles of Segment D traverse sedimentary deposits of the Saugus Formation (fluvial and alluvial fan deposits of late Pliocene to early Pleistocene age; ~3 to 1.5 Ma), the Hungry Valley Formation (fluvial, deltaic, and lacustrine deposits of early Pliocene age; ~5 Ma), the Castaic Formation (marine sandstones of late Miocene to early Pliocene age; ~6 to 5 Ma), the Ridge Route Formation (alluvial fan, fluvial, and deltaic deposits of late Miocene to early Pliocene age; ~8.4 to 5 Ma), the Peace Valley Formation (deltaic and lacustrine deposits of late Miocene to early Pliocene age; ~8.4 to 5 Ma), the Quail Lake Formation (marine sandstones of late Miocene age; ~10 Ma), and the Mint Canyon Formation (deltaic, fluvial, and lacustrine deposits of middle to late Miocene age; ~14 to 11. Ma). All of these rock units are known to produce significant paleontological resources and are defined as having maximum sensitivity. Ground disturbance estimates for certain areas of maximum sensitivity are only level 1, indicating low initial impacts and no required mitigation. However, there are also areas of maximum sensitivity where ground disturbance estimates range from level 2 to 6 (i.e., moderate to high initial impacts) and these impacts would require mitigation. All of these potential moderate to high impacts can be reduced to low residual impacts through adoption of appropriate mitigation measures (see Mitigation Measures PR-1 through PR-5).

7.1.5 Segment E

Construction of the new 230 kV transmission line along Segment E would traverse 9.7 miles of sedimentary deposits defined as having minor and major/undetermined sensitivity (see Table 7-1 and Appendix A). In addition, 0.8 of a mile of this segment crosses areas underlain by plutonic igneous rocks with zero resource sensitivity. 7.5 miles of Segment E traverses sedimentary deposits of Quaternary alluvium. Because these deposits accumulated relatively recently, they are defined as having only minor sensitivity; impacts are not significant and would not require mitigation. 2.2 miles of this segment cross sedimentary deposits of Quaternary older alluvium. These deposits accumulated during the Pleistocene (~1.8 to 0.01 Ma) and, although not proven to contain fossils, their sedimentary origin indicate a strong but unproven (i.e., undetermined) potential for producing fossil remains. Ground disturbance estimates for these areas of undetermined sensitivity are only levels 1 and 2, indicating low initial impacts and thus, not requiring mitigation.

7.1.6 Segment F

Construction of the new 230 kV transmission line along segments F1 and F2 would traverse 4 miles of sedimentary deposits of Quaternary alluvium. Because these deposits accumulated relatively recently, they are defined as having only minor sensitivity and impacts to paleontological resources defined as having only minor sensitivity (see Table 7-1 and Appendix A). These impacts are not significant and would not require mitigation.

7.1.7 Segment G

Construction of the new 230 kV transmission line along Segment G would traverse 11.1 miles of sedimentary deposits defined as having minor, major/undetermined, and maximum sensitivity (see Table 7-1 and Appendix A). In addition 10.1 miles of this segment cross areas underlain by plutonic igneous rocks and metamorphic rocks (including the Pelona Schist) with zero resource sensitivity. 3.7 miles of Segment G traverse sedimentary deposits of Quaternary alluvium. Because these deposits accumulated relatively recently, they are defined as having only minor sensitivity; impacts are not significant and would not require mitigation. 4.5 miles of this segment cross sedimentary deposits of Quaternary older alluvium (fluvial and alluvial fan deposits of Pleistocene age; ~1.8 to 0.01 Ma), the Vasquez Formation (alluvial fan, fluvial, and deltaic strata of late Oligocene to early Miocene age; ~26 to 22 Ma), and the San Francisquito Formation (marine sedimentary rocks of late Cretaceous to early Paleocene age ~70 to 60 Ma). Although not proven to contain fossils, the sedimentary origin of Quaternary older alluvium and the Vasquez Formation indicates a strong but unproven (i.e., undetermined) potential for producing fossil remains. The San Francisquito Formation is defined as having major paleontological resource sensitivity. Ground disturbance estimates for these areas of major/undetermined sensitivity are only levels 1 and 2, indicating low initial impacts and thus, not requiring mitigation. 2.3 miles of Segment G traverses sedimentary deposits of the Saugus Formation (fluvial and alluvial fan deposits of late Pliocene to early Pleistocene age; ~3 to 1.5 Ma), the Anaverde Formation (terrestrial and fluvial deposits of late Miocene to early Pliocene age ~6 to 5 Ma), and the Mint Canyon Formation (deltaic, fluvial, and lacustrine deposits of middle to late Miocene age; ~14 to 11 Ma). All of these rock units are known to produce significant paleontological resources and are defined as having maximum sensitivity. Ground disturbance estimates for certain areas of maximum sensitivity are only level 1, indicating low initial impacts and no required mitigation. However, there are also areas of maximum sensitivity where ground disturbance estimates range from level 2 to 4 (i.e., moderate initial impacts) and these impacts would require mitigation. These potential moderate impacts can be reduced to low residual impacts through adoption of appropriate mitigation measures (see Mitigation Measures PR-1 through PR-5).

TABLE 7-1. MILEAGE FOR INITIAL IMPACTS AND PALEONTOLOGICAL RESOURCE SENSITIVITY

	Zero Sensitivity			Minor Sensitivity			Major/Undetermined Sensitivity						Maximum Sensitivity								
Project Element	No Initial Impacts			Low Initial Impacts			Low Initial Impacts			Moderate Initial Impacts			Low Initial Impacts			Moderate Initial Impacts			High Initial Impacts		
	All	BLM	FS	All	BLM	FS	All	BLM	FS	All	BLM	FS	All	BLM	FS	All	BLM	FS	All	BLM	FS
Segment A	–	–	–	13.2	4.9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Segment B	–	–	–	26.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Segment C	–	–	–	21.7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Segment D	0.9	–	–	21.3	–	0.1	1.1	–	–	–	–	–	6.3	–	3.8	13.1	–	7.7	1.2	–	1.2
Segment E	0.8	–	–	7.5	–	–	2.2	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Segment F1	–	–	–	0.8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Segment F2	–	–	–	2.8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Segment G	10.1	–	–	3.7	–	0.1	4.5	–	–	–	–	–	0.1	–	2.0	2.2	–	1.4	–	–	–
Segment 2a	6.1	–	–	–	–	–	0.1	–	–	0.3	–	–		–	–		–	–	–	–	–
Segment H1	0.4	–	–	2	–	–	0.4	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Segment H2	14.2	–	–	0.8	–	–	–	–	–	–	–	–	–	–	–	0.4	–	–	1.7	–	1.4
Segment I	18.4	–	–	9	–	–	1.3	–	–	–	–	–	0.6	–	–	5.2	–	–	0.2	–	0.2
115th Street	0.3	–	–	3.3	–	–	1.2	–	–	–	–	–	–	–	–	–	–	–	–	–	–
New 230 kV	–	–	–	0.6	–	–	–	–	–	–	–	–	3.4	–	–	7.6	–	–	0.4	–	–
Reconductoring	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Haskell SS	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	Entire	–	–
Barren Ridge SS	–	–	–	Entire	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

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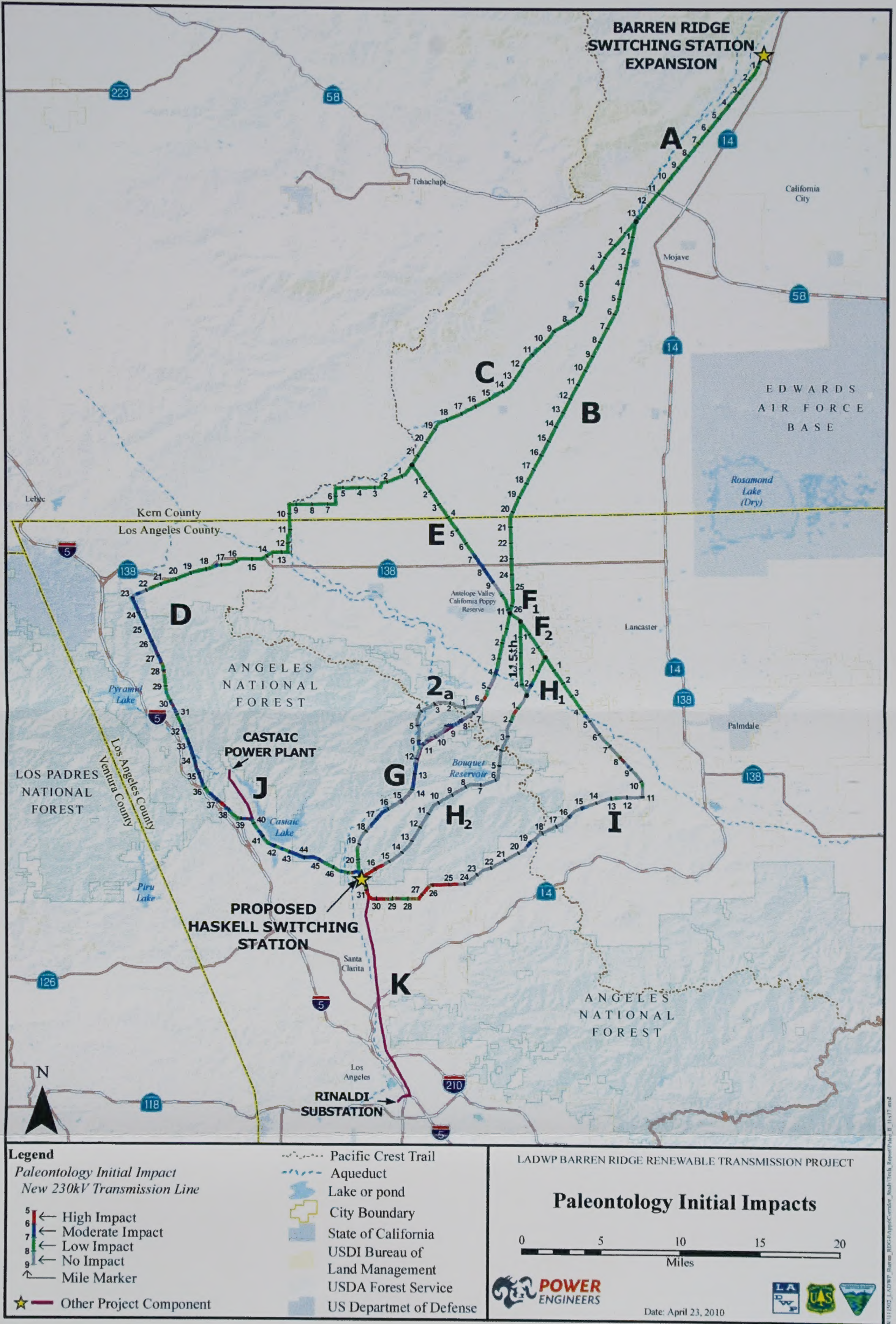
FIGURE 7-1. INITIAL IMPACTS


BARREN RIDGE SWITCHING STATION EXPANSION
A
B
C
D
E
F1
F2
2a
G
H1
H2
I
J
K
CASTAIC POWER PLANT
PROPOSED HASKELL SWITCHING STATION
RINALDI SUBSTATION
Tehachapi
California City
Mojave
EDWARDS AIR FORCE BASE
Rosamond Lake (Dry)
Kern County
Los Angeles County
Lebec
Antelope Valley California Poppy Reserve
Lancaster
Palmdale
115th
ANGELES NATIONAL FOREST
LOS PADRES NATIONAL FOREST
Pyramid Lake
Castaic Lake
Bouquet Reservoir
Piru Lake
Los Angeles County
Ventura County
Santa Clarita
Los Angeles
223
58
14
138
5
126
118
210
N
Legend
Paleontology Initial Impact
New 230kV Transmission Line
High Impact
Moderate Impact
Low Impact
No Impact
Mile Marker
Other Project Component
Pacific Crest Trail
Aqueduct
Lake or pond
City Boundary
State of California
USDI Bureau of Land Management
USDA Forest Service
US Departmet of Defense
LADWP BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
Paleontology Initial Impacts
0
5
10
15
20
Miles
POWER ENGINEERS
Date: April 23, 2010
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7.1.8 Segment 2a

Construction of the new 230 kV transmission line along Segment 2a would traverse 0.4 miles of sedimentary deposits defined as major/undetermined (see Table 7-1 and Appendix A). In addition, 6.1 miles of this segment cross areas underlain by plutonic igneous rocks and metamorphic rocks with zero resource sensitivity. About 0.4 miles of this segment cross sedimentary deposits of Quaternary older alluvium (fluvial and alluvial fan deposits of Pleistocene age; ~1.8 to 0.01 Ma). Although not proven to contain fossils, the sedimentary origin of Quaternary older alluvium indicates a strong but unproven (i.e., undetermined) potential for producing fossil remains. Ground disturbance estimates for certain areas of major/undetermined sensitivity are only level 2, indicating low initial impacts and no required mitigation. However, there are also areas of major/undetermined sensitivity where ground disturbance estimates are level 4 (i.e., moderate initial impacts) and these impacts would require mitigation. These potential moderate impacts can be reduced to low residual impacts through adoption of appropriate mitigation measures (see Mitigation Measures PR-1 through PR-5).

7.1.9 Segment H

Construction of the new 230 kV transmission line along Segment H1 would traverse 2.4 miles of sedimentary deposits defined as having minor and major/undetermined sensitivity (see Table 7-1 and Appendix A). In addition, 0.4 of a mile of this segment crosses areas underlain by plutonic igneous rocks and metamorphic rocks (including the Pelona Schist) with zero resource sensitivity. Two miles of Segment H1 traverse sedimentary deposits of Quaternary alluvium. Because these deposits accumulated relatively recently, they are defined as having only minor sensitivity; impacts are not significant and would not require mitigation. About 0.4 of a mile of this segment crosses sedimentary deposits of Quaternary older alluvium (fluvial and alluvial fan deposits of Pleistocene age; ~1.8 to 0.01 Ma). Although not proven to contain fossils, the sedimentary origin of Quaternary older alluvium indicates a strong but unproven (i.e., undetermined) potential for producing fossil remains. Ground disturbance estimates for these areas of major/undetermined sensitivity are only levels 1 and 2, indicating low initial impacts and thus, not requiring mitigation.

Construction of the new 230 kV transmission line along segment H2 would traverse 2.9 miles of sedimentary deposits defined as having minor and maximum sensitivity (see Table 7-1 and Appendix A). In addition, 14.2 miles of this segment cross areas underlain by plutonic igneous rocks and metamorphic rocks (including the Pelona Schist) with zero resource sensitivity. About 0.8 of a mile of Segment H2 traverses sedimentary deposits of Quaternary alluvium. Because these deposits accumulated relatively recently, they are defined as having only minor sensitivity; impacts are not significant and would not require mitigation. 2.3 miles of this segment cross sedimentary deposits of the Castaic Formation (marine sandstones of late Miocene to early Pliocene age; ~6 to 5 Ma), the Anaverde Formation (terrestrial and fluvial deposits of late Miocene to early Pliocene age ~6 to 5 Ma), and the Mint Canyon Formation (deltaic, fluvial, and lacustrine deposits of middle to late Miocene age; ~14 to 11 Ma). All of these rock units are known to produce significant paleontological resources and are defined as having maximum sensitivity. Ground disturbance estimates for areas of maximum sensitivity range from level 2 to 6 (i.e., moderate to high initial impacts) and these impacts would require mitigation. These potential moderate impacts can be reduced to low residual impacts through adoption of appropriate mitigation measures (see Mitigation Measures PR-1 through PR-5).

7.1.10 Segment I

Construction of the new 230 kV transmission line along Segment I would traverse 16.3 miles of sedimentary deposits defined as having minor, major/undetermined, and maximum sensitivity (see Table 7-1 and Appendix A). In addition, 18.4 miles of this segment cross areas underlain by plutonic igneous rocks and metamorphic rocks (including the Pelona Schist) with zero resource sensitivity. Nine miles of Segment I traverse sedimentary deposits of Quaternary alluvium. Because these deposits accumulated relatively recently, they are defined as having only minor sensitivity; impacts are not significant and would not require mitigation. About 1.3 miles of this segment crosses sedimentary deposits of Quaternary older alluvium (fluvial and alluvial fan deposits of Pleistocene age; ~1.8 to 0.01 Ma). Although not proven to contain fossils, the sedimentary origin of Quaternary older alluvium indicates a strong but unproven (i.e., undetermined) potential for producing fossil remains. Ground disturbance estimates for these areas of major/undetermined sensitivity are only levels 1 and 2, indicating low initial impacts and thus, not requiring mitigation. About six miles of this segment crosses sedimentary deposits of the Castaic Formation (marine sandstones of late Miocene to early Pliocene age; ~6 to 5 Ma), the Anaverde Formation (terrestrial and fluvial deposits of late Miocene to early Pliocene age ~6 to 5 Ma), the Mint Canyon Formation (deltaic, fluvial, and lacustrine deposits of middle to late Miocene age; ~14 to 11 Ma), and the Tick Canyon Formation (fluvial and lacustrine deposits of early Miocene age; ~24 to 16 Ma). All of these rock units are known to produce significant paleontological resources and are defined as having maximum sensitivity. Ground disturbance estimates for areas of maximum sensitivity range from level 2 to 6 (i.e., moderate to high initial impacts) and these impacts would require mitigation. These potential moderate impacts can be reduced to low residual impacts through adoption of appropriate mitigation measures (see Mitigation Measures PR-1 through PR-5).

7.1.11 115th Street

Construction of the new 230 kV transmission line along 115th Street would traverse 4.5 miles of sedimentary deposits defined as having minor and major/undetermined (see Table 7-1 and Appendix A). In addition, 0.3 of a mile of this segment crosses areas underlain by plutonic igneous rocks with zero resource sensitivity. About 3.3 miles of this segment traverse sedimentary deposits of Quaternary alluvium. Because these deposits accumulated relatively recently, they are defined as having only minor sensitivity; impacts are not significant and would not require mitigation. About 1.2 miles of this segment cross sedimentary deposits of Quaternary older alluvium (fluvial and alluvial fan deposits of Pleistocene age; ~1.8 to 0.01 Ma). Although not proven to contain fossils, the sedimentary origin of Quaternary older alluvium indicates a strong but unproven (i.e., undetermined) potential for producing fossil remains. Ground disturbance estimates for these areas of major/undetermined sensitivity are only levels 1 and 2, indicating low initial impacts and thus, not requiring mitigation.

7.2 NEW 230 KV CIRCUIT

Construction of the new 230 kV circuit along Segment J would occur in areas underlain by paleontological resources defined as having minor and maximum sensitivity (see Table 7-1). However, because no ground disturbance activities are proposed for this Project element, there would be no significant impacts to paleontological resources and no requirement for mitigation.

7.3 RECONDUCTORING

Reconductoring along Segment K would occur in areas underlain by paleontological resources defined as having minor, major/undetermined, and maximum sensitivity (see Table 7-1 and Appendix A). However, because no ground disturbance activities are proposed for this Project element, there would be no significant impacts to paleontological resources and no requirement for mitigation.

7.4 NEW HASKELL CANYON SWITCHING STATION

Construction of the new Haskell Canyon Switching Station would occur in an area underlain by sedimentary deposits of the Saugus Formation (fluvial and alluvial fan deposits of late Pliocene to early Pleistocene age; ~3 to 1.5 Ma), the Castaic Formation (marine sandstones of late Miocene to early Pliocene age; ~6 to 5 Ma), and the Mint Canyon Formation (deltaic, fluvial, and lacustrine deposits of middle to late Miocene age; ~14 to 11 Ma). These rock units are known to produce significant paleontological resources and are defined as having maximum sensitivity. Ground disturbance estimates for areas of maximum sensitivity range from level 2 to 6 (i.e., moderate to high initial impacts) and these impacts would require mitigation. These potential moderate impacts can be reduced to low residual impacts through adoption of appropriate mitigation measures (see Mitigation Measures PR-1 through PR-5).

7.5 EXPANSION OF BARREN RIDGE SWITCHING STATION

The proposed expansion of the existing Barren Ridge Switching Station would occur in an area underlain by sedimentary deposits of Quaternary alluvium. Because these deposits accumulated relatively recently, they are defined as having only minor sensitivity; impacts are not significant and would not require mitigation.

8.0 ALTERNATIVES

NEPA and CEQA both require consideration of a reasonable range of alternatives to the Proposed Action that would feasibly attain most of the basic objectives of the Project, but avoid or substantially lessen any of the significant or adverse effects of the Project.

8.1 DEVELOPMENT OF ALTERNATIVES

A range of alternatives were identified through a siting analysis, the scoping process, and supplemental studies and consultations. A full discussion of alternatives development can be found in the Alternatives Development Report (POWER 2010).

The regional siting analysis identified nine routing opportunities (Segments A through I) for the new 230 kV transmission line between Barren Ridge Switching Station and the proposed Haskell Canyon Switching Station. Some of the routing opportunities or segments were adjusted or modified based on public input and preliminary environmental review, and preliminary electrical system studies. Each of the segments are discussed in detail, including impact analysis, in Section 7.0 of this report. Several of these segments were not used in the formation of alternatives as discussed below.

Segment E was recommended for elimination from analysis in the EIS/EIR. The Segment would require an additional 6.5 miles of transmission line in comparison to the Proposed Action and would not significantly reduce or avoid impacts to air quality, biological, cultural, visual, and water resources. Segment H was also recommended for elimination, due to increased impacts to air quality and noise, along with safety concerns, related to helicopter construction. Cumulative effects for the Project would also increase because of the further disturbance of revegetated and rehabilitated areas and potential for impacts from three transmission line projects in the same vicinity.

Eight routing opportunities (Segments A, B, C, D, F, G, 2a and I) were combined to create end-to-end routing alternatives for the proposed double-circuit 230 kV transmission line between Barren Ridge Switching Station and the proposed Haskell Canyon Switching Station. In addition to routing segments, each alternative discussed within this section would include other Project components as discussed earlier within this report. These include the addition of a new circuit on existing towers between Castaic Power Plant and Haskell Canyon, reconductoring of the existing BR-RIN transmission line, construction of a new Haskell Canyon Switching Station, and expansion of the existing Barren Ridge Switching Station. Impact assessment and impact results for each of the other Project components listed above, and which are common to each of the alternatives, are described in Section 7.0. Descriptions and impact assessment of the routing alternatives follow in the sections below.

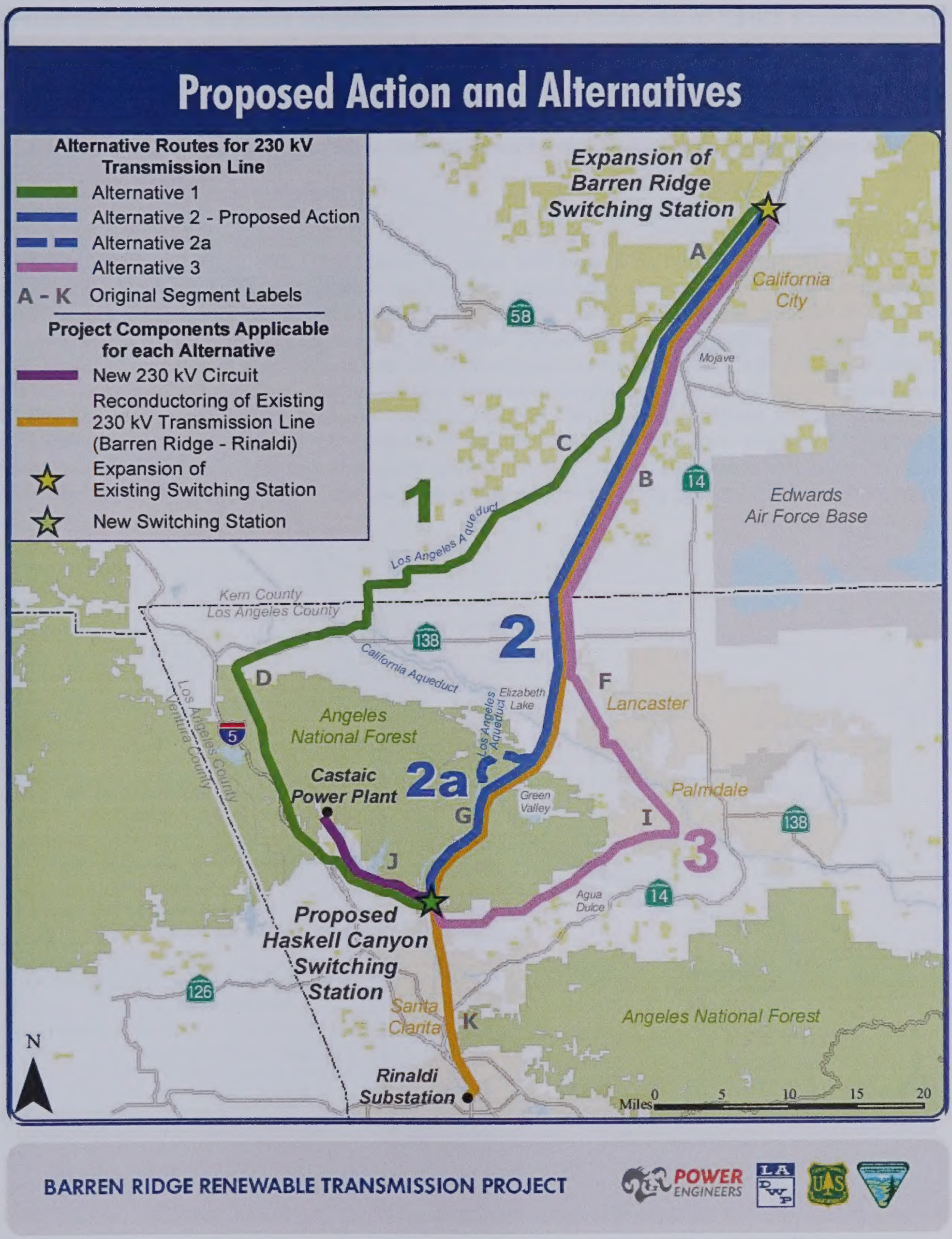
8.2 ALTERNATIVES DESCRIPTION

The following alternatives were identified as a reasonable range of alternatives to the Project that would feasibly attain most of the basic objectives of the Project, but avoid or substantially lessen any of the significant or adverse effects of the Project.

8.2.1 Action Alternatives

In addition to a new double-circuit 230 kV transmission line between the Barren Ridge and Haskell Canyon switching stations, whose route would vary among the action Alternatives, the four action Alternatives would include the following common components: the expansion of the existing Barren Ridge Switching Station, construction of a new Haskell Canyon Switching Station, reconductoring of the existing 230 kV transmission line from the Barren Ridge Switching Station to Rinaldi Substation, and the addition of a new 230 kV circuit on existing towers between the Castaic Power Plant and Haskell Canyon Switching Station. Refer to Figure 8-1.

FIGURE 8-1. ACTION ALTERNATIVES


Proposed Action and Alternatives
Alternative Routes for 230 kV Transmission Line
Alternative 1
Alternative 2 - Proposed Action
Alternative 2a
Alternative 3
A - K Original Segment Labels
Project Components Applicable for each Alternative
New 230 kV Circuit
Reconductoring of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
Expansion of Existing Switching Station
New Switching Station
Expansion of Barren Ridge Switching Station
A
California City
58
Mojave
C
B
14
Edwards Air Force Base
1
Los Angeles Aqueduct
Kern County
Los Angeles County
138
2
California Aqueduct
D
F
Elizabeth Lake
Lancaster
Angeles National Forest
Los Angeles Aqueduct
Los Angeles County
Ventura County
5
Castaic Power Plant
2a
Green Valley
Palmdale
G
I
138
3
J
Agua Dulce
14
Proposed Haskell Canyon Switching Station
126
Santa Clarita
K
Angeles National Forest
N
Rinaldi Substation
Miles 0 5 10 15 20
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
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LA DWP

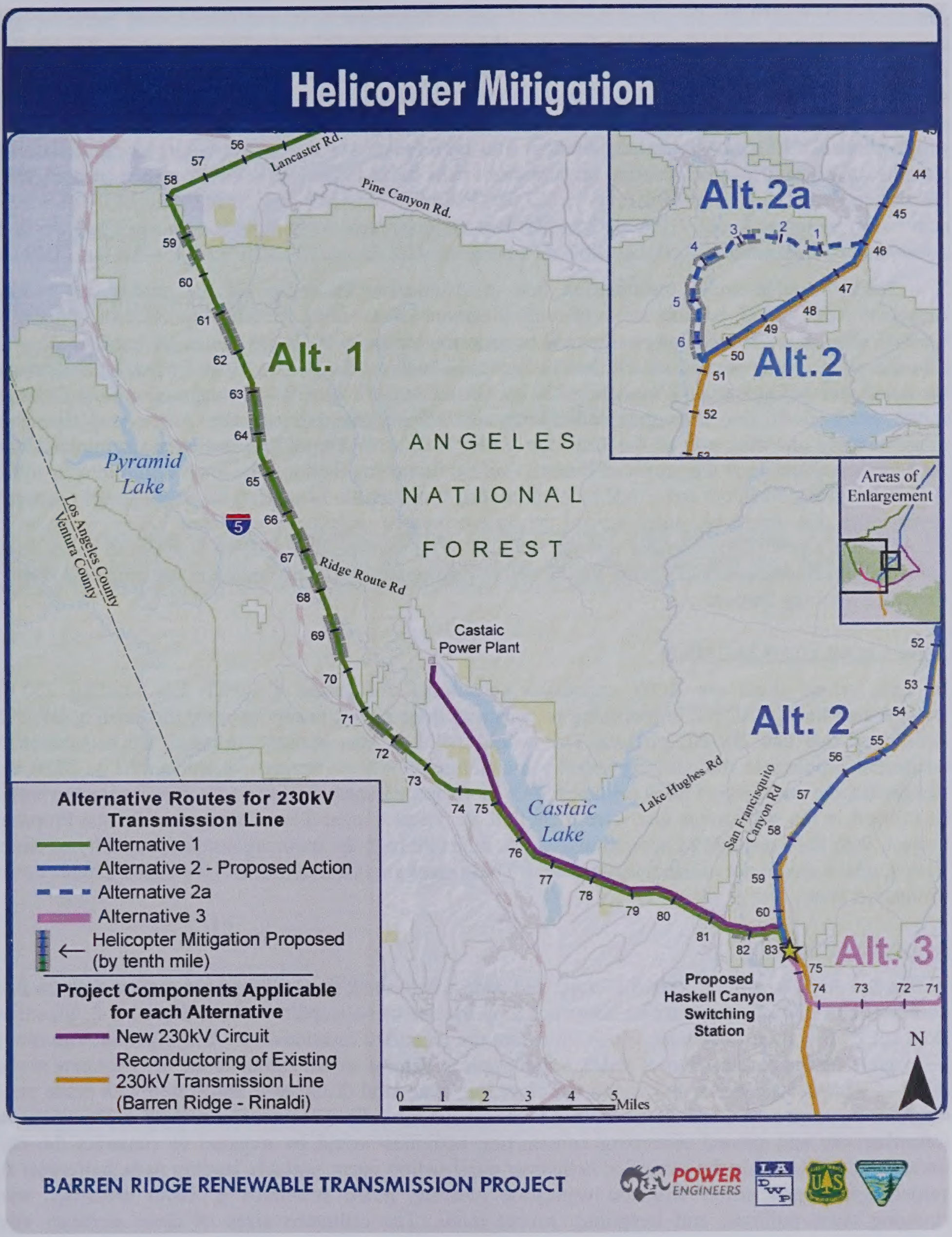
Alternative 1 (Segments A, C, and D)

The Alternative 1 230 kV double-circuit transmission line comprises the preliminary routing Segments A, C, and D, and is the longest Alternative, at 83 miles long. It would run from the Barren Ridge Switching Station to the unincorporated community of Mojave, while paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines. It would continue south-southwest to parallel the Los Angeles Aqueduct to Lancaster Road, where it would travel west to the I-5 utility corridor. It would then run southeast along LADWP's existing Castaic – Rinaldi corridor to the proposed Haskell Canyon Switching Station.

Helicopter Mitigation

Within the ANF where the terrain is steep and access is limited, the USFS would require that the new double-circuit 230 kV structures be constructed with the use of helicopters (such as the Hughes 500 or Bell 212, or Sikorsky Skycrane). Refer to Figure 8-2, the Identified Helicopter Mitigation Locations Map, which illustrates the identified locations for this mitigation. The use of helicopters for the construction of transmission tower structures would eliminate the need for new access roads to structure locations, and would therefore minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites. However, the following site and ground disturbing construction activities would be required to construct the new transmission line within the identified helicopter construction areas: portable landing pads, helicopter fly yards/staging areas, tower structure vegetation clearing, guard structures at major crossings, wire stringing sites, pullouts, and temporary access roads.

FIGURE 8-2. IDENTIFIED HELICOPTER MITIGATION LOCATIONS


Helicopter Mitigation
Alt. 1
Alt. 2a
Alt. 2
Alt. 2
Alt. 3
ANGELES NATIONAL FOREST
Pyramid Lake
Castaic Lake
Castaic Power Plant
Lancaster Rd.
Pine Canyon Rd.
Ridge Route Rd
Lake Hughes Rd
San Francisquito Canyon Rd
Los Angeles County
Ventura County
5
Areas of Enlargement
Proposed Haskell Canyon Switching Station
Alternative Routes for 230kV Transmission Line
Alternative 1
Alternative 2 - Proposed Action
Alternative 2a
Alternative 3
Helicopter Mitigation Proposed (by tenth mile)
Project Components Applicable for each Alternative
New 230kV Circuit
Reconductoring of Existing 230kV Transmission Line (Barren Ridge - Rinaldi)
0 1 2 3 4 5 Miles
N
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS

Alternative 2 (Segments A, B, and G) –LADWP's Proposed Action

Alternative 2, LADWP's Proposed Action, comprises Segments A, B, and G and is 61 miles long. It begins at the Barren Ridge Switching Station and runs south, paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines. It travels south from the unincorporated community of Mojave, California through the Antelope Valley and approximately one mile east of the Antelope Valley California Poppy Reserve before continuing onto National Forest System lands and ending at the proposed Haskell Canyon Switching Station. The entire route would remain within designated utility corridors and would parallel existing transmission lines. Refer to Section 1.2, Project Description, for a full description of this Alternative.

Alternative 2a (Segments A, B, G and 2a)

The 230 kV double-circuit transmission line in Alternative 2a comprises the preliminary routing Segments A, B, and G, but includes a re-route (Segment 2a) avoiding the unincorporated community of Green Valley. It is 63 miles long and would be very similar to the Proposed Action (Alternative 2), with 56 miles of the same alignment. Alternative 2a would begin at the Barren Ridge Switching Station and run south, paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines. It would travel south from the unincorporated community of Mojave through the Antelope Valley and approximately one mile east of the Antelope Valley California Poppy Reserve before continuing onto NFS lands and ending at the proposed Haskell Canyon Switching Station. The route would remain within designated utility corridors and would parallel existing transmission lines, with the exception of the nearly seven miles that would be routed around the unincorporated community of Green Valley. Segment 2a would create a new utility corridor through the ANF. The re-route would rejoin Segment G south of the unincorporated community of Green Valley before continuing south and ending at the proposed Haskell Canyon Switching Station.

Three-Circuit Tower Mitigation

In areas where there are ROW expansion constraints and where LADWP has existing 230 kV transmission lines, LADWP is proposing to construct three-circuit towers to carry the existing BR-RIN circuit and two new BR-HC circuits. This would avoid various impacts including the acquisition of residential property in the unincorporated communities of Willow Springs (milepost 27.1 to 27.6) and Elizabeth Lake and Green Valley (milepost 44.6 to 46 and milepost 50.8 to 51.7). This mitigation would be utilized in the same areas that were identified for Three-Circuit Tower Mitigation for the Proposed Project, with the exception of approximately five miles through the unincorporated community of Green Valley, which would not utilize this mitigation. These areas are illustrated in 1-7, the Three-Circuit Tower Mitigation Map.

Helicopter Mitigation

Within the ANF where the terrain is steep and access is limited, the USFS would require that the new double-circuit 230 kV structures be constructed by the use of helicopter. Refer to Figure 8-2, Identified Helicopter Mitigation Locations, which illustrates the identified locations for this mitigation. The use of helicopters for the construction of transmission tower structures would eliminate the need for new access roads to structure locations, and would therefore minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites. However, the following site and ground disturbing construction activities would be required to construct the new transmission line within the identified helicopter construction areas: portable landing pads, helicopter fly yards/staging areas, tower structure vegetation clearing, guard structures at major crossings, wire stringing sites, pullouts, and temporary access roads. The estimated sizes of these auxiliary sites (temporary and permanent) and additional construction information is detailed above in the description of the Proposed Action (Alternative 2) and in Appendix B.

Alternative 3 (Segments A, B, F, and I)

The proposed 230 kV double-circuit transmission line in Alternative 3 comprises preliminary routing Segments A, B, F, and I. It is 76 miles long and would begin at the Barren Ridge Switching Station and run south, paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI lines. It would travel south from the unincorporated community of Mojave through the Antelope Valley and approximately one mile east of the Antelope Valley California Poppy Reserve before continuing southeast past SCE's Antelope Substation. The route would then travel toward the city of Palmdale, parallel to SCE's existing high-voltage transmission lines. It would make a sharp turn to the south to parallel LADWP's existing Victorville – Rinaldi 500 kV and Adelanto – Rinaldi 230 kV transmission lines. This Alternative would then parallel these transmission lines west, crossing two miles of the ANF. The Alternative would then parallel LADWP's 500 kV PDCI line north to the proposed Haskell Canyon Switching Station.

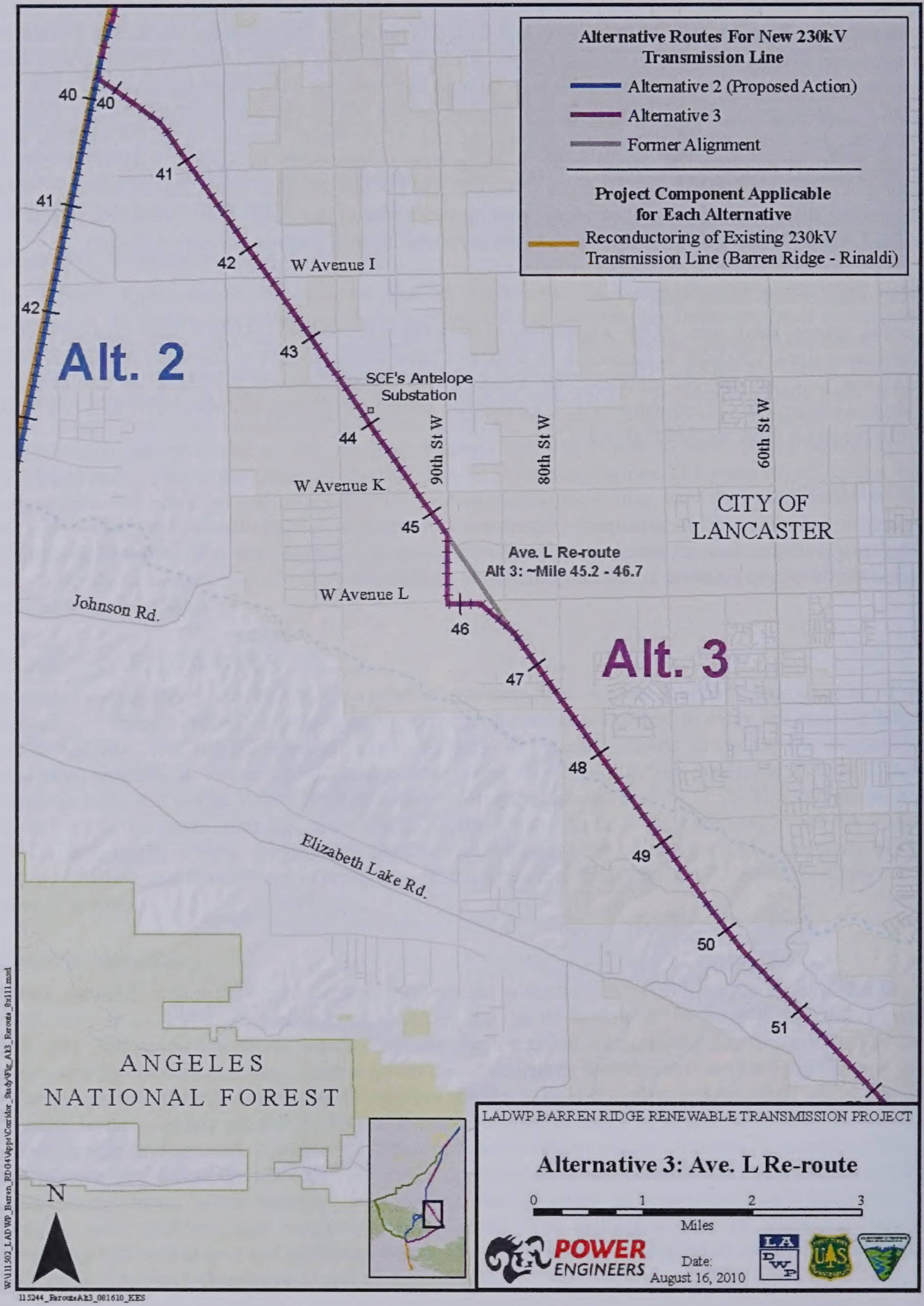
Three-Circuit Tower Mitigation

In areas where there are ROW expansion constraints and where LADWP has existing 230 kV transmission lines, LADWP is proposing to construct three-circuit towers to carry the existing BR-RIN circuit and two new BR-HC circuits. This would avoid various impacts including the acquisition of residential property in the unincorporated communities of Willow Springs (milepost 27.1 to 27.6). Please refer to the small inset map on Figure 1-7.

Avenue L Re-route

To avoid acquisition of private property, a portion of Alternative 3 from mile marker 45.2 to 46.7 was moved to parallel a smaller distribution line south along 90th Street West and then east along West Avenue "L." Refer to Figure 8-3, Avenue L Re-route on Alternative 3.

FIGURE 8-3. AVENUE L RE-ROUTE ON ALTERNATIVE 3


Alternative Routes For New 230kV Transmission Line
Alternative 2 (Proposed Action)
Alternative 3
Former Alignment
Project Component Applicable for Each Alternative
Reconductoring of Existing 230kV Transmission Line (Barren Ridge - Rinaldi)
40
40
41
41
42
42
43
44
45
46
47
48
49
50
51
Alt. 2
Alt. 3
W Avenue I
SCE's Antelope Substation
W Avenue K
W Avenue L
90th St W
80th St W
60th St W
CITY OF LANCASTER
Ave. L Re-route
Alt 3: ~Mile 45.2 - 46.7
Johnson Rd.
Elizabeth Lake Rd.
ANGELES NATIONAL FOREST
N
LADWP BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
Alternative 3: Ave. L Re-route
0
1
2
3
Miles
POWER ENGINEERS
Date:
August 16, 2010
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115244_RerouteAlt3_081610_KES

8.2.2 No Action Alternative

Under the No Action Alternative, the construction of a new 230 kV transmission line, the addition of a new circuit on existing structures from Haskell Canyon to the Castaic Power Plant, the reconductoring of the existing BR-RIN transmission line, the construction of a new Haskell Canyon Switching Station, and the expansion of the existing Barren Ridge Switching Station would not occur. LADWP currently maintains an estimated 147 miles of existing access roads in the Project area, 97 of which are located within the ANF. Current, on-going operation and maintenance activates for existing facilities in the Project area would continue. The EIS/EIR must address the resulting environmental effects from taking no action and compare them to the effects of permitting the Proposed Action or an Alternative to the Proposed Action.

8.3 IMPACT RESULTS—ROUTING ALTERNATIVES

8.3.1 Alternative 1 (Segments A, C, and D)

Alternative 1, which includes segments A, C, and D, has the potential to create significant impacts to paleontological resources with maximum sensitivity occurring along a 25-mile section of the southern portion of Segment D between MP 22.4 and the proposed Haskell Canyon Switching Station. A total of 8 miles of this segment are slated for helicopter construction of lattice towers and all this mileage is underlain by rock units having maximum sensitivity (7.7 miles of Ridge Route Formation and 0.7 miles of Peace Valley Formation). Because of steep terrain in these areas, ground disturbance would likely create initial impacts to paleontological resources that would also require mitigation. As summarized in Table 7-1, these significant impacts include a total of 13.1 miles of moderate initial impacts and 1.2 miles of high initial impacts. In addition, construction of the proposed Haskell Canyon Switching Station has the potential to create significant impacts to paleontological resources with maximum sensitivity occurring within the footprint of the new switching station. In contrast, expansion of the existing Barren Ridge Switching Station would not create any significant impacts to paleontological resources, nor would reconductoring of the existing Barren Ridge-Rinaldi transmission line or the stringing of new lines between Haskell Canyon Switching Station and the Castaic Power Plant. Construction of Alternative 1 would avoid potential significant impacts to paleontological resources occurring along segments G and I. Portions of these two segments are underlain by geologic rock units known to contain fossil remains of Miocene land mammals.

8.3.2 Alternative 2 (Segments A, B, and G)—LADWP's Proposed Action

Alternative 2, which includes segments A, B, and C, has the potential to create significant impacts to paleontological resources with maximum sensitivity occurring along a short, 2-mile section of the southern portion of Segment G between MP 19.2 and 21.2. As summarized in Table 7-1, these significant impacts include a total of 2.2 miles of moderate initial impacts. In addition, construction of the proposed Haskell Canyon Switching Station has the potential to create significant impacts to paleontological resources with maximum sensitivity occurring within the footprint of the new switching station. In contrast, expansion of the existing Barren Ridge Switching Station would not create any significant impacts to paleontological resources, nor would reconductoring of the existing Barren Ridge-Rinaldi transmission line or the stringing of new lines between Haskell Canyon Switching Station and the Castaic Power Plant. Construction of Alternative 2 would avoid potential significant impacts to paleontological resources occurring along segments D and I. Portions of these two segments are underlain by geologic rock units known to contain fossil remains of Miocene land mammals.

8.3.3 Alternative 2a (Segments A, B, G, and 2a)

Alternative 2a, which bypasses the unincorporated community of Green Valley, has the potential to create significant impacts to paleontological resources with major/undetermined sensitivity occurring along a short, 0.3-mile section between MP 6.0 and 6.3. A total of 4 miles of this segment are slated for helicopter construction of lattice towers and all this mileage is underlain by rock units having zero resource sensitivity. As summarized in Table 7-1, these significant impacts include a total of 0.3 miles of moderate initial impacts. Construction of Alternative 2a would avoid potential significant impacts to paleontological resources occurring along segments D and I. Portions of these two segments are underlain by geologic rock units known to contain fossil remains of Miocene land mammals.

8.3.4 Alternative 3 (Segments A, B, F, and I)

Alternative 3, which includes segments A, B, F, and I, has the potential to create significant impacts to paleontological resources with maximum sensitivity occurring along short, 3.4-mile and 2.7-mile sections of the southern portion of Segment I between MP 24.4 and 27.8 and MP 29.2 and 31.9, respectively. As summarized in Table 7-1, these significant impacts include a total of 5.2 miles of moderate initial impacts and 0.2 of a mile of high initial impacts. In addition, construction of the proposed Haskell Canyon Switching Station has the potential to create significant impacts to paleontological resources with maximum sensitivity occurring within the footprint of the new switching station. In contrast, expansion of the existing Barren Ridge Switching Station would not create any significant impacts to paleontological resources, nor would reconductoring of the existing Barren Ridge-Rinaldi transmission line or the stringing of new lines between Haskell Canyon Switching Station and the Castaic Power Plant. Construction of Alternative 3 would avoid potential significant impacts to paleontological resources occurring along segments D and G. Portions of these two segments are underlain by geologic rock units known to contain fossil remains of Miocene land mammals.

8.4 NO ACTION ALTERNATIVE

The No Action Alternative would avoid potential impacts to paleontological resources by eliminating all proposed construction activities along individual Project segments.

8.5 CUMULATIVE EFFECTS

Cumulative effects to paleontological resources are those effects that result from impacts of the BRRTP when incrementally added to impacts of other past, present, and/or future projects. Analysis of cumulative effects places project-specific impacts into a broader context that takes into account the full range of impacts to paleontological resources by projects taking place over a given space and time.

8.5.1 Cumulative Projects List – Major Present and Reasonably Foreseeable Future Actions

The cumulative projects list is used to provide a general context for the cumulative effects. This list includes present and reasonably foreseeable future actions in the Project vicinity that have the potential to combine with the Proposed Action or Alternatives. While a distinct impact area for cumulative impacts and specific present and reasonably foreseeable actions is determined individually for each resource area, collectively, the projects listed below represent the major known and anticipated activities that may occur in the general Project area. The Cumulative Projects Map (Figure 8-4) illustrates the location of energy infrastructure and other major projects in reference to the Proposed Action and Alternatives.

As the project list comprises projects in various stages of planning and development, it is likely that some of these projects would be completed as currently proposed while others would not. To be conservative, the cumulative analysis assumes that all projects listed would be built and in operation during the operating lifetime of the proposed Project. The list was developed in consultation with the following agencies:

- USFS – Angeles National Forest (ANF)
- BLM – Ridgecrest Field Office

- BLM – Palm Springs Field Office
- United States Air Force – Edwards Air Force Base
- Kern County – Planning Department
- Los Angeles County – Department of Regional Planning
- City of California City
- City of Lancaster
- City of Palmdale
- City of Santa Clarita
- City of Los Angeles
- City of San Fernando
- LADWP

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Energy Infrastructure Projects

Transmission Projects

Antelope Transmission Project – Construction of Southern California Edison's (SCE) proposed Antelope Transmission Project is underway and is proceeding in three sequential segments. Construction of Segments 1, 2 and 3A have been completed. Construction of Segment 3B, from Windhub Substation to and including Highwind Substation, has not started and no schedule has been developed by SCE (California Public Utilities – Current Projects).

Segment 1, Antelope – Pardee 500 kV Transmission Line, involved the construction of a new 25.6-mile transmission line between SCE's existing Antelope Substation in the city of Lancaster and SCE's existing Pardee Substation in Santa Clarita, with modifications to and/or expansion of the substations. The line was constructed in an existing SCE 66 kV transmission line right-of-way (ROW) for 23 miles, and within a new ROW for 18 miles. The line is initially energized to 220 kV to serve existing energy demand and can be upgraded to 500 kV to accommodate future needs.

Segment 2, Antelope – Vincent 500 kV Transmission Line, consists of a new 17.8 mile transmission line between the Antelope Substation and SCE's existing Vincent Substation near Acton. Similar to Segment 1, the line would initially be energized at 220 kV and upgraded to meet future needs.

Segment 3, Antelope – Tehachapi Transmission Line, consists of two phases. The first phase, 3A, would involve the construction of a new 26.1-mile 500 kV transmission line between the Antelope Substation and a proposed new substation in the vicinity of the unincorporated community of Mojave (Substation 1). Similar to Segments 1 and 2, this line would be initially energized at 220 kV and upgraded to meet future needs. The second phase, 3B, would involve the construction of a new 9.4-mile 220 kV transmission line from the proposed Substation 1 to a proposed new substation in the Monolith area (Substation 2).

Tehachapi Renewable Transmission Project (TRTP) – SCE is proposing to construct the TRTP, which would involve new and upgraded transmission infrastructure along 173 miles of new and existing rights-of-way, in southern Kern County, portions of Los Angeles County including the ANF, and the southwestern portion of San Bernardino County. Stated objectives for the project include providing the electrical facilities necessary to integrate levels of wind generation in excess of 700 MW and up to 4,500 MW in the Tehachapi Wind Resource Area (California Public Utilities – Current Projects).

The environmental review process for the project is currently underway. Construction began in April 2010 on approved sections. Project construction is estimated to be completed in 2015.

The project is composed of Segments 4 through 11, with Segments 4 through 8 and Segments 10 and 11 being transmission facilities, and Segment 9 being the addition and upgrade of substation facilities. Proposed transmission lines would be constructed primarily within existing rights-of-way. Major project components include:

- Constructing two new single-circuit 220 kV transmission lines within 4 miles of new ROW between the Cottonwood Substation and proposed Whirlwind Substation (Segment 4);
- Constructing a new single-circuit 500 kV transmission line within 16 miles of new ROW between the Antelope Substation and proposed Whirlwind Substation (Segment 4);
- Rebuilding 18 miles of the existing Antelope – Vincent and Antelope – Mesa 220 kV transmission lines to 500 kV standards within existing ROW between the Antelope and Vincent Substations (Segment 5);

- Rebuilding 27 miles of the existing Antelope – Mesa 220 kV transmission line and 5 miles of the existing Rio Hondo – Vincent 220 kV transmission line to 500 kV standards between the Vincent Substation and the southern boundary of the ANF (Segment 6);
- Rebuilding 16 miles of the existing Antelope – Mesa 220 kV transmission line to 500 kV standards between the southern boundary of the ANF and Mesa Substation (Segment 7);
- Rebuilding 33 miles of the existing Chino – Mesa 200 kV transmission line to 500 kV standards between a point 2 miles east of the Mesa Substation and the Mira Loma Substation (Segment 8);
- Rebuilding 7 miles of the existing Chino – Mira Loma No. 1 220 kV transmission line from single-circuit to double-circuit structures (Segment 8);
- Constructing a new 500/220 kV Whirlwind Substation 4 to 5 miles south of the Cottonwood Substation (Segment 9);
- Upgrading the existing Antelope, Vincent, Mesa, Gould, and Mira Loma Substations to accommodate new transmission line construction and system compensation elements (Segment 9);
- Constructing a new single-circuit 500 kV transmission line within 17 miles of new ROW between the Windhub Substation and proposed Whirlwind Substation (Segment 10);
- Rebuilding 19 miles of existing 220 kV transmission line to 500 kV standards in existing ROW between the Vincent and Gould Substations (Segment 11);
- Adding a new 220 kV circuit between the Mesa and Gould Substations on the vacant side of the existing Eagle Rock – Mesa 220 kV transmission line double circuit structures (Segment 11); and
- Installing associated telecommunications infrastructure.

Generation Projects

Numerous wind and solar generation projects are in various stages of planning and development within the Project vicinity. Projects considered include the projects currently undergoing environmental review or projects that have been recently approved. Table 8-1 below summarizes the major known projects and their current status as of April 2011 (County of Kern Environmental Documents and AV Solar Ranch One).

TABLE 8-1. PROPOSED GENERATION PROJECTS IN THE PROJECT VICINITY

Project Name	Project Type	Approximate Generation	Area (acres)	Location	Status
Alta East Wind Project	Wind	300 MW	3,660	Kern County	Application to Kern County deemed complete on Aug. 2010
Alta Wind Energy Center: Alta-Oak Creek Mojave Project	Wind Turbine	800 MW	9,175	Kern County	Approved by Kern County Dec. 2009
Antelope Valley Solar Project	Solar Photovoltaic	650 MW	5,698	Kern County	Draft EIR released April 2011
AV Solar Ranch One	Solar Photovoltaic	230 MW	21,000	Los Angeles County	Final EIR completed Aug. 2010
Avalon Wind Project	Wind	255 MW	10,000	Kern County	Application to Kern County deemed complete on July 2010
Beacon Solar Energy Project	Concentrated Solar	250 MW	2,012	Kern County	Application for Certification approved Aug. 2010
Catalina Renewable Energy Project	Wind Turbine & Solar Photovoltaic	350 MW	7,472	Kern County	Notice of Preparation for a Draft EIR filed Feb. 2011

Project Name	Project Type	Approximate Generation	Area (acres)	Location	Status
Clearvista Wind Project	Wind Turbine	40 MW	226	Kern County	Draft EIR released Nov. 2010
Edwards Air Force Base Solar Project	Solar	500 MW	3,288	Kern County	Lease execution anticipated 2012
Lower West Wind Energy Project	Wind Turbine	14 MW	185	Kern County	Draft EIR released April 2011
Monte Vista Solar Array	Solar Photovoltaic	126 MW	1,040	Kern County	Notice of Preparation for a Draft EIR filed March 2010
Morgan Hills Wind Project	Wind	230 MW	3,604	Kern County	Application submitted Nov. 2010
North Sky River Wind Project	Wind Turbine	326 MW	1,330	Kern County	Notice of Preparation for a Draft EIR filed Nov. 2010
Pacific Wind Energy Project	Wind Turbine	151 MW	8,300	Kern County	Approved by Kern County Oct. 2010
Pahnamid Wind Energy Project	Wind Turbine	411 MW	7,106	Kern County	Notice of Preparation for a Draft EIR filed April 2011
PdV Wind Energy Project	Wind Turbine	300 MW	5,820	Kern County	Approved by Kern County July 2008
Pine Canyon Wind Project	Wind Turbine	150 MW	12,000	Kern County	Preliminary planning
Pine Tree Solar Project	Solar Photovoltaic	10 MW	75	Kern County	Preliminary planning
Pine Tree Wind & Expansion	Wind Turbine	135 MW	n/a	Kern County	Preliminary planning
RE Distributed Solar Project	Solar Photovoltaic	221 MW	1,709	Kern County	Notice of Preparation for a Draft EIR filed Jan. 2011
Ridge Rider Solar Park Project	Solar Photovoltaic	38 MW	475	Kern County	Notice of Preparation of a Draft EIR filed March 2010
Rising Tree Wind Farm	Wind Turbine	234 MW	2,745	Kern County	Notice of Intent to prepare a EIS/EIR filed Jan. 2011
Rosamond Solar Array	Solar Photovoltaic	155 MW	1,177	Kern County	Notice of Preparation of a Draft EIR filed March 2010
Rosamond Solar Project	Solar Photovoltaic	120 MW	960	Kern County	Approved by Kern County Nov. 2010
Sand Canyon Wind Projects	Wind Turbine	40 MW	300	Kern County	Notice of Preparation of a Draft EIR filed Oct. 2010
Willow Springs Solar Array Project	Solar Photovoltaic	160 MW	1,402	Kern County	Notice of Preparation of a Draft EIR filed March 2010
Windstar Wind Energy Project	Wind Turbine	65 MW	1,007	Kern County	Approved by Kern County April 2009

There are also plans in various stages of development to establish additional wind and solar energy projects on BLM land in the Project vicinity. The submission of an application to BLM is a preliminary step in the project planning process, but not all applications ultimately result in successful project development. Below is a list of current applications for wind and solar energy generation projects in the Project vicinity submitted to BLM's Ridgecrest Field Office as of February 2010 (U.S. Department of the Interior, Bureau of Land Management – Renewable Energy).

TABLE 8-2. BLM RIDGECREST OFFICE APPLICATIONS FOR WIND AND SOLAR ENERGY GENERATION PROJECTS IN THE PROJECT VICINITY.

Serial Number	Applicant	Date Application Received, ROW Grant Issued, Last Amended Date	Approximate Area (Acres)	Project Type	Location
CACA 46978	Sean Roberts, Renewable Land LLC	7/1/04	528	Pending Wind	Mojave

Serial Number	Applicant	Date Application Received, ROW Grant Issued, Last Amended Date	Approximate Area (Acres)	Project Type	Location
CACA 47848	Oak Creek Energy	1/11/06	7,349	Pending Wind	Lucchese
CACA 48536	Oak Creek Energy	7/25/06	1,800	Pending Wind	Soledad Mountain Wind Project
CACA 48820	First Solar (Formally OptiSolar Inc.)	12/13/08	5,760	Pending Solar	Mojave Area
CACA 49577	Power Partners SW (enXco)	8/10/07	1,816	Pending Wind	Soledad area
CACA 50171	AES SEAWEST INC	7/3/09	120	Pending Wind	Kern County
CACA 50768	Riverside Wind Energy LLC	4/20/09	480	Pending Wind	Gorman
CACA 51016	Advanced Dev Services, Inc	4/30/09	11,174	Pending Wind	Kern County
CACA 51335	Alta Windpower Dev., LLC	7/13/09	584	Pending Wind	Kern County
CACA 51561	Power Partners Southwest	12/11/09	1,160	Pending Wind	Kern County

Other Major Projects

Transportation and Public Facilities

California High Speed Rail – This project proposes a ±700-mile high speed rail line from Sacramento to San Diego. The Statewide Programmatic EIS/EIR was completed in 2005, and the Bay Area to Central Valley High-Speed Train Program EIS/EIR was completed in 2008. Multiple second-tier project-level environmental documents (with preliminary engineering design) are currently underway (California High Speed Rail Authority).

Pacific Pipeline Storm Relocation Project and Access Road Repairs – Pacific Pipeline is proposing to relocate several miles of crude oil pipeline to more stable ground within the ANF. Project implementation was expected in November 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Antelope Valley Water Bank Project – This project proposes to develop facilities to store and recharge imported surface water and associated delivery and distribution pipelines. The 13,440-acre facility area would be bounded by the Kern/Los Angeles County border line (also known as Avenue A) to the south and Rosamond Boulevard to the north, and between 170th Street West and 100th Street West in unincorporated Kern County (U.S. Department of the Interior, Bureau of Reclamation – Mid-Pacific Region).

Soledad Canyon Cemex Project – The Soledad Canyon Cemex project would be a 56-million-ton sand and gravel mining project in the Soledad Canyon area. The BLM approved the project with mitigating measures in 2000, and the Interior Board of Land Appeals affirmed that decision in 2002. A City of Santa Clarita challenge to the US Supreme Court was denied in 2006. This project is pending development with ongoing challenges and delays (Cemex United States).

Community Development

Centennial, California – The proposed project site consists of 12,000 acres located one mile east of Interstate 5 (I-5) and adjacent to State Highway 138 in Los Angeles County. The project would include a specific plan and subdivision entitlements (i.e., tract maps and conditional use permits) for a master planned community. The specific plan proposes a maximum of 23,000 dwelling units and 14 million total square feet of non-residential development of employment areas (12,233,390 square feet) and retail serving centers (1,986,336 square feet), anticipated to be built over approximately 20 years, with build-out expected in 2030. If the project is approved by Los Angeles County, it is estimated that the non-residential development may generate approximately 31,000 jobs. The draft Specific Plan for the unincorporated community of Centennial was submitted to Los Angeles County in February 2003 and is currently being reviewed by the county (Centennial, California).

Maintenance and Landscape Management Projects

Bouquet Canyon Road Realignment – Los Angeles County Department of Public Works is proposing to straighten some sections of Bouquet Canyon Road and to raise the road surface by approximately nine feet. A Memorandum of Understanding between ANF and Los Angeles County is currently under development to initiate the project (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

San Francisquito Road Rehabilitation and Sediment Disposal Site – Los Angeles County Department of Public Works is proposing a road realignment and new bridge along San Francisquito Road within the ANF and to use eight acres of Forest land as a spoils site in support of construction activities. Public Scoping began in June 2007, and a decision was expected in September 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Old Ridge Route Storm Damage Repair – USFS is proposing to repair and provide maintenance to seven storm-damaged locations along the Old Ridge Route in ANF. A decision on the project is expected in late 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Livestock Grazing Allotments – BLM currently authorizes both cattle and sheep grazing on 11 grazing allotments in and around the project area. The livestock are authorized with 10 year permits/leases and yearly authorizations. These allotments encompass over one half million acres of BLM-managed lands. The number of livestock grazed each year depends upon weather conditions. The majority of the livestock are sheep. The number of sheep average around thirty thousand head. Three of the allotments support several thousand head of cattle (Harris 2010).

Tule Ridge/South Portal Fuels Reduction Project – USFS proposes fuels reduction and re-establishment of a fuel break to provide protection to unincorporated community of Green Valley. The project would also enhance wildlife for mammals and birds (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Jupiter Fuelbreak Project – USFS proposes to re-establish an existing fuel break that begins southwest of the unincorporated community of Green Valley and travels east, bisecting Jupiter Mountain, before heading south to Bouquet Reservoir.

Santa Clara/Mojave River Rangers District Plantation Maintenance Project – The proposed project would consist of vegetation maintenance at 13 plantations located within the ANF in order to reduce wildfire risk, and improve wildlife habitat and the vitality of individual remaining trees. Proposed actions include removal of dead trees, thinning of live trees, pruning, removing weeds, and planting for reforestation where necessary. This action was approved by the District Ranger in January 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Lake Hughes Plantation Restoration Project – The proposed project would restore unauthorized off-highway vehicle trails at the Christian and Taylor Plantations located within the ANF in order to reduce soil erosion, the spread of weeds, destruction of native plants, soil compaction, and wildlife habitat loss. Proposed actions include recontouring and decompacting soils, reseeding with native species, and reinforcing check dams. The project was approved by the District Ranger in 2009 and scheduled for implementation in January 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Bouquet and San Francisquito Habitat Improvement Project – The project proposes invasive species removal in Bouquet and San Francisquito Canyons (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Local Projects

In conjunction with the major projects listed above, a summary of local foreseeable projects within the study area that could contribute to cumulative effects are summarized in the table below. These proposed projects were gathered from applications to the planning departments of the various jurisdictions and have been categorized by project type.

TABLE 8-3. PROPOSED LOCAL PROJECTS IN THE PROJECT VICINITY.

	Kern County	Los Angeles County[1]	City of California City	City of Palmdale[2]	City of Lancaster	City of Santa Clarita	City of Los Angeles	City of San Fernando
Single Family Residential (may include multiple units)	1	96	0	14	93	10	2	2
Multi Family Residential (may include multiple units)	28	9	0	9	2	1	2	1
Schools	2	2	0	9	2	0	0	0
Religious Uses	10	7	0	13	0	0	1	1
Recreational Facilities	7	5	0	7	1	0	0	1
Public Facilities – police, fire, library, correctional	2	5	0	4	0	0	0	0
Commercial/ Office Development	40	33	0	96	6	21	2	7
Hotels/Motels	1	0	0	9	2	1	1	2
Medical/Care Facilities	4	6	0	16	0	1	0	1
Industrial Facilities	20	0	0	17	1	6	2	2
Mining Operations	15	0	0	4	0	0	0	0
RV Facilities	2	0	0	0	0	0	0	0
Animal Facilities	8	6	0	1	0	0	0	0
Aviation Facilities	2	0	0	0	0	0	0	0
Non-Commercial Energy Facilities	1	2	0	0	0	0	0	0

[1] Projects listed for Los Angeles County include all projects that could contribute to cumulative effects within the following County Districts: Antelope Valley West, Bouquet Canyon, Castaic Canyon, Chatsworth, Lancaster, Leona Valley, Mount Gleason, Newhall, North Palmdale, Palmdale, Quartz Hill, Sand Canyon, Soledad. Some identified projects included may be outside of the study area.

[2] Projects listed for the City of Palmdale include all projects that could contribute to cumulative effects within the City. Some identified projects included may be outside of the study area.

8.5.2 Cumulative Impacts

Overall, foreseeable projects on federal, State, county, city, and private land would probably encompass over 89,000 acres of development, although the extent of ground disturbance within each project footprint would vary widely, as would the potential for adverse effects to paleontological resources. Table 8-4 briefly summarizes the ranges of factors within different types of projects that could affect paleontological resources.

TABLE 8-4. POTENTIAL SOURCES OF IMPACTS TO PALEONTOLOGICAL RESOURCES CAUSED BY DIFFERENT TYPES OF PROJECTS

Project Type	Potential Ground Disturbance Impacts
Transmission Projects	Access roads, vegetation clearance, structure placement
Generation Projects (Wind and Solar)	Access roads, vegetation clearance, turbine tower/panel foundations
Transportation and Public Facilities	Installation of pipeline, excavation for water bank
Recreation and Community Development	Excavation, clearing and grading
Local Projects	Excavation, construction of access roads, grading, clearing etc.

A cursory review of the major pending projects reveals that few directly overlap with the various proposed BRRTP Alternatives. Further, when considering only those portions of the BRRTP Alternatives where moderate and/or high initial impacts to paleontological resources of major or maximum sensitivity are likely, it appears that only Alternative 1 has the potential for significant cumulative effects. In addition, although the potential to encounter paleontological resources along portions of all three Project Alternatives is considered high, standard conditions for monitoring and fossil recovery pertaining to paleontological resources that may be unearthed during construction of any ongoing or future projects in the area would minimize potential cumulative impacts to a level that is considered less than significant.

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10.0 ACRONYMS AND ABBREVIATIONS

AC	Alternating Current
ANF	Angeles National Forest
BLM	Bureau of Land Management
BR-RIN	Barren Ridge – Rinaldi Transmission Line
BRRTP	Barren Ridge Renewable Transmission Project
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
Forest Service	U.S. Department of Agriculture, Forest Service
IP	Invertebrate Paleontology
kV	Kilovolt
LACM	Natural History Museum of Los Angeles County
LADWP	Los Angeles Department of Water and Power
Ma	mega annum (million years ago)
MP	Mile Post
NEPA	National Environmental Policy Act
NFMA	National Forest Management Act
NFS	National Forest System
PDCI	Pacific Direct Current Intertie
ROW	Right-of-Way
SCE	Southern California Edison
SDNHM	San Diego Natural History Museum
TRTP	Tehachapi Renewable Transmission Project
TSP	Tubular Steel Pole
UCMP	University of California, Museum of Paleontology
USDA	U.S. Department of Agriculture

APPENDIX A: PALEONTOLOGY IMPACT TABLES

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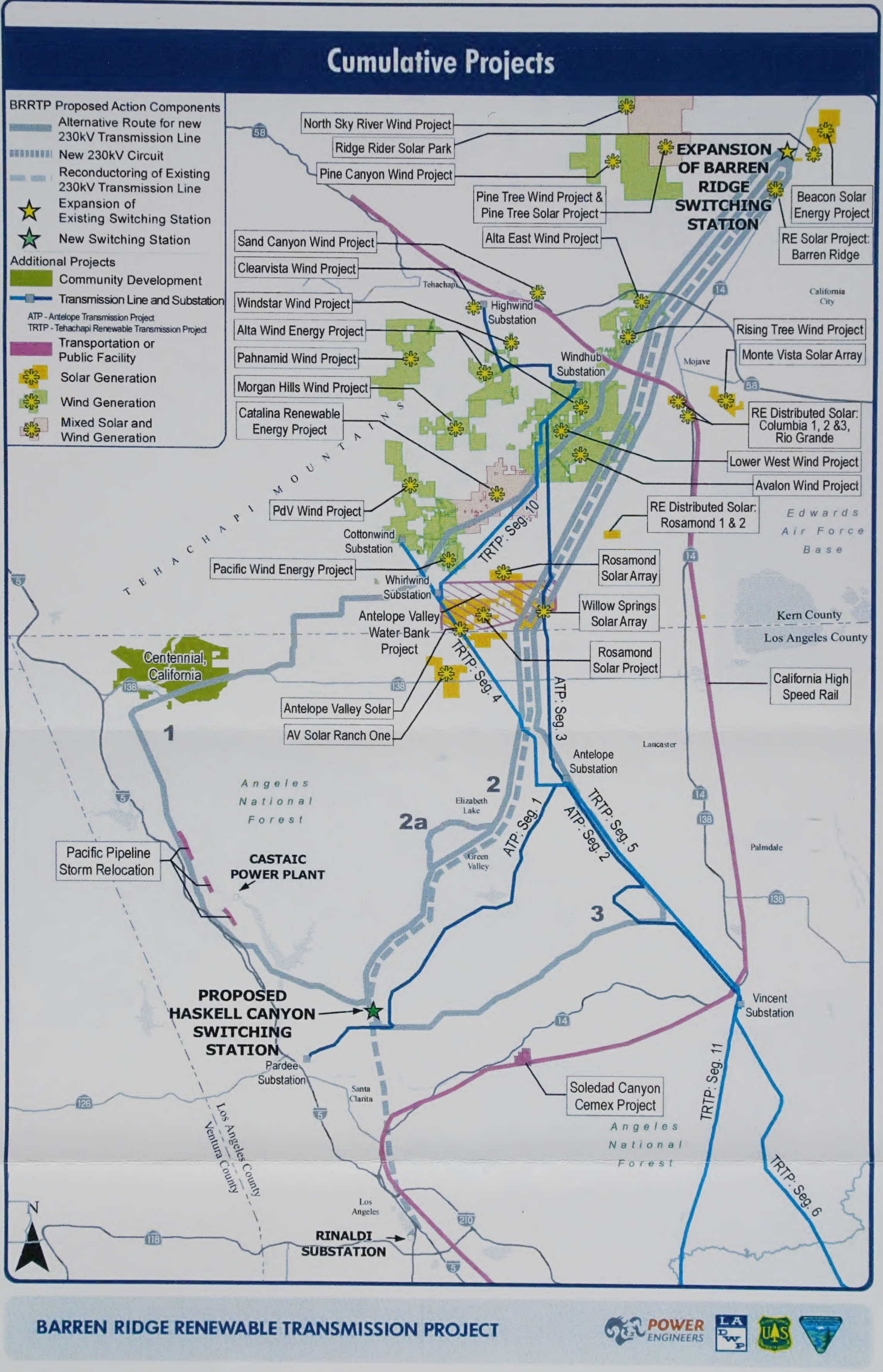
FIGURE 8-4. CUMULATIVE PROJECTS


Cumulative Projects
BRRTP Proposed Action Components
Alternative Route for new 230kV Transmission Line
New 230kV Circuit
Reconductoring of Existing 230kV Transmission Line
Expansion of Existing Switching Station
New Switching Station
Additional Projects
Community Development
Transmission Line and Substation
ATP - Antelope Transmission Project
TRTP - Tehachapi Renewable Transmission Project
Transportation or Public Facility
Solar Generation
Wind Generation
Mixed Solar and Wind Generation
North Sky River Wind Project
Ridge Rider Solar Park
Pine Canyon Wind Project
Pine Tree Wind Project & Pine Tree Solar Project
EXPANSION OF BARREN RIDGE SWITCHING STATION
Beacon Solar Energy Project
RE Solar Project: Barren Ridge
Alta East Wind Project
Sand Canyon Wind Project
Clearvista Wind Project
Windstar Wind Project
Alta Wind Energy Project
Pahnamid Wind Project
Morgan Hills Wind Project
Catalina Renewable Energy Project
Tehachapi
Highwind Substation
Windhub Substation
California City
Mojave
Rising Tree Wind Project
Monte Vista Solar Array
RE Distributed Solar: Columbia 1, 2 &3, Rio Grande
Lower West Wind Project
Avalon Wind Project
RE Distributed Solar: Rosamond 1 & 2
Edwards Air Force Base
TEHACHAPI MOUNTAINS
PdV Wind Project
Cottonwind Substation
TRTP: Seg. 10
Pacific Wind Energy Project
Whirlwind Substation
Rosamond Solar Array
Willow Springs Solar Array
Antelope Valley Water Bank Project
Kern County
Los Angeles County
Centennial, California
Rosamond Solar Project
TRTP: Seg. 4
ATP: Seg. 3
California High Speed Rail
Antelope Valley Solar
AV Solar Ranch One
1
Lancaster
Antelope Substation
Angeles National Forest
2
Elizabeth Lake
2a
ATP: Seg. 1
TRTP: Seg. 5
ATP: Seg. 2
Palmdale
Pacific Pipeline Storm Relocation
CASTAIC POWER PLANT
Green Valley
3
PROPOSED HASKELL CANYON SWITCHING STATION
Vincent Substation
Pardee Substation
Santa Clarita
Soledad Canyon Cemex Project
TRTP: Seg. 11
Angeles National Forest
Los Angeles County
Ventura County
TRTP: Seg. 6
N
Los Angeles
RINALDI SUBSTATION
58
14
138
5
126
118
210
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS
LADWP

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Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
274-A-528	1	A	0.0	0.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
275-A-1056	1	A	0.1	0.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
276-A-1584	1	A	0.2	0.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
277-A-2112	1	A	0.3	0.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
278-A-2640	1	A	0.4	0.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
279-A-3168	1	A	0.5	0.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
280-A-3696	1	A	0.6	0.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
281-A-4224	1	A	0.7	0.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
282-A-4752	1	A	0.8	0.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
283-A-5280	1	A	0.9	1.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
284-A-5808	1	A	1.0	1.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
285-A-6336	1	A	1.1	1.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
286-A-6864	1	A	1.2	1.3	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
287-A-7392	1	A	1.3	1.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
288-A-7920	1	A	1.4	1.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
289-A-8448	1	A	1.5	1.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
290-A-8976	1	A	1.6	1.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
291-A-9504	1	A	1.7	1.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
292-A-10032	1	A	1.8	1.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
293-A-10560	1	A	1.9	2.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
294-A-11088	1	A	2.0	2.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
295-A-11616	1	A	2.1	2.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
296-A-12144	1	A	2.2	2.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
297-A-12672	1	A	2.3	2.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
298-A-13200	1	A	2.4	2.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
299-A-13728	1	A	2.5	2.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
300-A-14256	1	A	2.6	2.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
301-A-14784	1	A	2.7	2.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
302-A-15312	1	A	2.8	2.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
303-A-15840	1	A	2.9	3.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
304-A-16368	1	A	3.0	3.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
305-A-16896	1	A	3.1	3.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
306-A-17424	1	A	3.2	3.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
307-A-17952	1	A	3.3	3.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
308-A-18480	1	A	3.4	3.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
309-A-19008	1	A	3.5	3.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
310-A-19536	1	A	3.6	3.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
311-A-20064	1	A	3.7	3.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
312-A-20592	1	A	3.8	3.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
313-A-21120	1	A	3.9	4.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
314-A-21648	1	A	4.0	4.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
315-A-22176	1	A	4.1	4.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
316-A-22704	1	A	4.2	4.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
317-A-23232	1	A	4.3	4.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
318-A-23760	1	A	4.4	4.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
319-A-24288	1	A	4.5	4.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
320-A-24816	1	A	4.6	4.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
321-A-25344	1	A	4.7	4.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
322-A-25872	1	A	4.8	4.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
323-A-26400	1	A	4.9	5.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
324-A-26928	1	A	5.0	5.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
325-A-27456	1	A	5.1	5.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
326-A-27984	1	A	5.2	5.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
327-A-28512	1	A	5.3	5.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
328-A-29040	1	A	5.4	5.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
329-A-29568	1	A	5.5	5.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
330-A-30096	1	A	5.6	5.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
331-A-30624	1	A	5.7	5.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
332-A-31152	1	A	5.8	5.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
333-A-31680	1	A	5.9	6.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
334-A-32208	1	A	6.0	6.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
335-A-32736	1	A	6.1	6.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
336-A-33264	1	A	6.2	6.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
337-A-33792	1	A	6.3	6.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
338-A-34320	1	A	6.4	6.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
339-A-34848	1	A	6.5	6.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
340-A-35376	1	A	6.6	6.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
341-A-35904	1	A	6.7	6.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
342-A-36432	1	A	6.8	6.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
343-A-36960	1	A	6.9	7.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
344-A-37488	1	A	7.0	7.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
345-A-38016	1	A	7.1	7.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
346-A-38544	1	A	7.2	7.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
347-A-39072	1	A	7.3	7.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
348-A-39600	1	A	7.4	7.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
349-A-40128	1	A	7.5	7.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
350-A-40656	1	A	7.6	7.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
351-A-41183	1	A	7.7	7.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
352-A-41711	1	A	7.8	7.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
353-A-42239	1	A	7.9	8.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
354-A-42767	1	A	8.0	8.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
355-A-43295	1	A	8.1	8.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
356-A-43823	1	A	8.2	8.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
357-A-44351	1	A	8.3	8.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
358-A-44879	1	A	8.4	8.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
359-A-45407	1	A	8.5	8.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
360-A-45935	1	A	8.6	8.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
361-A-46463	1	A	8.7	8.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
362-A-46991	1	A	8.8	8.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
363-A-47519	1	A	8.9	9.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
364-A-48047	1	A	9.0	9.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
365-A-48575	1	A	9.1	9.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
366-A-49103	1	A	9.2	9.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
367-A-49631	1	A	9.3	9.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
368-A-50159	1	A	9.4	9.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
369-A-50687	1	A	9.5	9.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
370-A-51215	1	A	9.6	9.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
371-A-51743	1	A	9.7	9.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
372-A-52271	1	A	9.8	9.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
373-A-52799	1	A	9.9	10.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
374-A-53327	1	A	10.0	10.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
375-A-53855	1	A	10.1	10.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
376-A-54383	1	A	10.2	10.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
377-A-54911	1	A	10.3	10.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
378-A-55439	1	A	10.4	10.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
379-A-55967	1	A	10.5	10.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
380-A-56495	1	A	10.6	10.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
381-A-57023	1	A	10.7	10.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
382-A-57551	1	A	10.8	10.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
383-A-58079	1	A	10.9	11.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
384-A-58607	1	A	11.0	11.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
385-A-59135	1	A	11.1	11.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
386-A-59663	1	A	11.2	11.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
387-A-60191	1	A	11.3	11.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
388-A-60719	1	A	11.4	11.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
389-A-61247	1	A	11.5	11.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
390-A-61775	1	A	11.6	11.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
391-A-62303	1	A	11.7	11.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
392-A-62831	1	A	11.8	11.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
393-A-63359	1	A	11.9	12.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
394-A-63887	1	A	12.0	12.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
395-A-64415	1	A	12.1	12.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
396-A-64943	1	A	12.2	12.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
397-A-65471	1	A	12.3	12.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
398-A-65999	1	A	12.4	12.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
399-A-66527	1	A	12.5	12.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
400-A-67055	1	A	12.6	12.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
401-A-67583	1	A	12.7	12.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
402-A-68111	1	A	12.8	12.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
403-A-68639	1	A	12.9	13.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
404-A-69167	1	A	13.0	13.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
405-A-69695	1	A	13.1	13.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
406-A-69953	1	A	13.2	13.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
406-B-528	2	B	0.0	0.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
407-B-1056	2	B	0.1	0.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
408-B-1584	2	B	0.2	0.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
409-B-2112	2	B	0.3	0.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
410-B-2640	2	B	0.4	0.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
411-B-3168	2	B	0.5	0.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
412-B-3696	2	B	0.6	0.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
413-B-4224	2	B	0.7	0.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
414-B-4752	2	B	0.8	0.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
415-B-5280	2	B	0.9	1.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
416-B-5808	2	B	1.0	1.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
417-B-6336	2	B	1.1	1.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
418-B-6864	2	B	1.2	1.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
419-B-7392	2	B	1.3	1.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
420-B-7920	2	B	1.4	1.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
421-B-8448	2	B	1.5	1.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
422-B-8976	2	B	1.6	1.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
423-B-9504	2	B	1.7	1.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
424-B-10032	2	B	1.8	1.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
425-B-10560	2	B	1.9	2.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
426-B-11088	2	B	2.0	2.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
427-B-11616	2	B	2.1	2.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
428-B-12144	2	B	2.2	2.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
429-B-12672	2	B	2.3	2.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
430-B-13200	2	B	2.4	2.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
431-B-13728	2	B	2.5	2.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
432-B-14256	2	B	2.6	2.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
433-B-14784	2	B	2.7	2.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
434-B-15312	2	B	2.8	2.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
435-B-15840	2	B	2.9	3.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
436-B-16368	2	B	3.0	3.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
437-B-16896	2	B	3.1	3.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
438-B-17424	2	B	3.2	3.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
439-B-17952	2	B	3.3	3.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
440-B-18480	2	B	3.4	3.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
441-B-19008	2	B	3.5	3.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
442-B-19536	2	B	3.6	3.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
443-B-20064	2	B	3.7	3.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
444-B-20592	2	B	3.8	3.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
445-B-21120	2	B	3.9	4.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
446-B-21648	2	B	4.0	4.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
447-B-22176	2	B	4.1	4.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
448-B-22704	2	B	4.2	4.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
449-B-23232	2	B	4.3	4.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
450-B-23760	2	B	4.4	4.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
451-B-24288	2	B	4.5	4.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
452-B-24816	2	B	4.6	4.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
453-B-25344	2	B	4.7	4.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
454-B-25872	2	B	4.8	4.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
455-B-26400	2	B	4.9	5.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
456-B-26928	2	B	5.0	5.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
457-B-27456	2	B	5.1	5.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
458-B-27984	2	B	5.2	5.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
459-B-28512	2	B	5.3	5.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
460-B-29040	2	B	5.4	5.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
461-B-29568	2	B	5.5	5.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
462-B-30096	2	B	5.6	5.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
463-B-30624	2	B	5.7	5.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
464-B-31152	2	B	5.8	5.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
465-B-31680	2	B	5.9	6.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
466-B-32208	2	B	6.0	6.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
467-B-32736	2	B	6.1	6.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
468-B-33264	2	B	6.2	6.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
469-B-33792	2	B	6.3	6.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
470-B-34320	2	B	6.4	6.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
471-B-34848	2	B	6.5	6.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
472-B-35376	2	B	6.6	6.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
473-B-35904	2	B	6.7	6.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
474-B-36432	2	B	6.8	6.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
475-B-36960	2	B	6.9	7.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
476-B-37488	2	B	7.0	7.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
477-B-38016	2	B	7.1	7.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
478-B-38544	2	B	7.2	7.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
479-B-39072	2	B	7.3	7.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
480-B-39600	2	B	7.4	7.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
481-B-40128	2	B	7.5	7.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
482-B-40656	2	B	7.6	7.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
483-B-41183	2	B	7.7	7.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
484-B-41711	2	B	7.8	7.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
485-B-42239	2	B	7.9	8.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
486-B-42767	2	B	8.0	8.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
487-B-43295	2	B	8.1	8.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
488-B-43823	2	B	8.2	8.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
489-B-44351	2	B	8.3	8.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
490-B-44879	2	B	8.4	8.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
491-B-45407	2	B	8.5	8.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
492-B-45935	2	B	8.6	8.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
493-B-46463	2	B	8.7	8.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
494-B-46991	2	B	8.8	8.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
495-B-47519	2	B	8.9	9.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
496-B-48047	2	B	9.0	9.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
497-B-48575	2	B	9.1	9.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
498-B-49103	2	B	9.2	9.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
499-B-49631	2	B	9.3	9.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
500-B-50159	2	B	9.4	9.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
501-B-50687	2	B	9.5	9.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
502-B-51215	2	B	9.6	9.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
503-B-51743	2	B	9.7	9.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
504-B-52271	2	B	9.8	9.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
505-B-52799	2	B	9.9	10.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
506-B-53327	2	B	10.0	10.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
507-B-53855	2	B	10.1	10.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
508-B-54383	2	B	10.2	10.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
509-B-54911	2	B	10.3	10.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
510-B-55439	2	B	10.4	10.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
511-B-55967	2	B	10.5	10.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
512-B-56495	2	B	10.6	10.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
513-B-57023	2	B	10.7	10.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
514-B-57551	2	B	10.8	10.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
515-B-58079	2	B	10.9	11.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
516-B-58607	2	B	11.0	11.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
517-B-59135	2	B	11.1	11.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
518-B-59663	2	B	11.2	11.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
519-B-60191	2	B	11.3	11.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
520-B-60719	2	B	11.4	11.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
521-B-61247	2	B	11.5	11.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
522-B-61775	2	B	11.6	11.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
523-B-62303	2	B	11.7	11.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
524-B-62831	2	B	11.8	11.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
525-B-63359	2	B	11.9	12.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
526-B-63887	2	B	12.0	12.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
527-B-64415	2	B	12.1	12.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
528-B-64943	2	B	12.2	12.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
529-B-65471	2	B	12.3	12.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
530-B-65999	2	B	12.4	12.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
531-B-66527	2	B	12.5	12.6	0-10	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
532-B-67055	2	B	12.6	12.7	0-10	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
533-B-67583	2	B	12.7	12.8	0-10	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
534-B-68111	2	B	12.8	12.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
535-B-68639	2	B	12.9	13.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
536-B-69167	2	B	13.0	13.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
537-B-69695	2	B	13.1	13.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
538-B-70223	2	B	13.2	13.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
539-B-70751	2	B	13.3	13.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
540-B-71279	2	B	13.4	13.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
541-B-71807	2	B	13.5	13.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
542-B-72335	2	B	13.6	13.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
543-B-72863	2	B	13.7	13.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
544-B-73391	2	B	13.8	13.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
545-B-73919	2	B	13.9	14.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
546-B-74447	2	B	14.0	14.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
547-B-74975	2	B	14.1	14.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
548-B-75503	2	B	14.2	14.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
549-B-76031	2	B	14.3	14.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
550-B-76559	2	B	14.4	14.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
551-B-77087	2	B	14.5	14.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
552-B-77615	2	B	14.6	14.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
553-B-78143	2	B	14.7	14.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
554-B-78671	2	B	14.8	14.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
555-B-79199	2	B	14.9	15.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
556-B-79727	2	B	15.0	15.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
557-B-80255	2	B	15.1	15.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
558-B-80783	2	B	15.2	15.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
559-B-81311	2	B	15.3	15.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
560-B-81839	2	B	15.4	15.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
561-B-82367	2	B	15.5	15.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
562-B-82895	2	B	15.6	15.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
563-B-83423	2	B	15.7	15.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
564-B-83951	2	B	15.8	15.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
565-B-84479	2	B	15.9	16.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
566-B-85007	2	B	16.0	16.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
567-B-85535	2	B	16.1	16.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
568-B-86063	2	B	16.2	16.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
569-B-86591	2	B	16.3	16.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
570-B-87119	2	B	16.4	16.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
571-B-87647	2	B	16.5	16.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
572-B-88175	2	B	16.6	16.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
573-B-88703	2	B	16.7	16.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
574-B-89231	2	B	16.8	16.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
575-B-89759	2	B	16.9	17.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
576-B-90287	2	B	17.0	17.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
577-B-90815	2	B	17.1	17.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
578-B-91343	2	B	17.2	17.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
579-B-91871	2	B	17.3	17.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
580-B-92399	2	B	17.4	17.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
581-B-92927	2	B	17.5	17.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
582-B-93455	2	B	17.6	17.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
583-B-93983	2	B	17.7	17.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
584-B-94511	2	B	17.8	17.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
585-B-95039	2	B	17.9	18.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
586-B-95567	2	B	18.0	18.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
587-B-96095	2	B	18.1	18.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
588-B-96623	2	B	18.2	18.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
589-B-97151	2	B	18.3	18.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
590-B-97679	2	B	18.4	18.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
591-B-98207	2	B	18.5	18.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
592-B-98735	2	B	18.6	18.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
593-B-99263	2	B	18.7	18.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
594-B-99791	2	B	18.8	18.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
595-B-100319	2	B	18.9	19.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
596-B-100847	2	B	19.0	19.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
597-B-101375	2	B	19.1	19.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
598-B-101903	2	B	19.2	19.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
599-B-102431	2	B	19.3	19.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
600-B-102959	2	B	19.4	19.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
601-B-103487	2	B	19.5	19.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
602-B-104015	2	B	19.6	19.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
603-B-104543	2	B	19.7	19.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
604-B-105071	2	B	19.8	19.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
605-B-105599	2	B	19.9	20.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
606-B-106127	2	B	20.0	20.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
607-B-106655	2	B	20.1	20.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
608-B-107183	2	B	20.2	20.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
609-B-107711	2	B	20.3	20.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
610-B-108239	2	B	20.4	20.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
611-B-108767	2	B	20.5	20.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
612-B-109295	2	B	20.6	20.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
613-B-109823	2	B	20.7	20.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
614-B-110351	2	B	20.8	20.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
615-B-110879	2	B	20.9	21.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
616-B-111407	2	B	21.0	21.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
617-B-111935	2	B	21.1	21.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
618-B-112463	2	B	21.2	21.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
619-B-112991	2	B	21.3	21.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
620-B-113519	2	B	21.4	21.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
621-B-114047	2	B	21.5	21.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
622-B-114575	2	B	21.6	21.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
623-B-115103	2	B	21.7	21.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
624-B-115631	2	B	21.8	21.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
625-B-116159	2	B	21.9	22.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
626-B-116687	2	B	22.0	22.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
627-B-117215	2	B	22.1	22.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
628-B-117743	2	B	22.2	22.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
629-B-118271	2	B	22.3	22.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
630-B-118799	2	B	22.4	22.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
631-B-119327	2	B	22.5	22.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
632-B-119855	2	B	22.6	22.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
633-B-120383	2	B	22.7	22.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
634-B-120911	2	B	22.8	22.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
635-B-121439	2	B	22.9	23.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
636-B-121967	2	B	23.0	23.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
637-B-122495	2	B	23.1	23.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
638-B-123023	2	B	23.2	23.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
639-B-123550	2	B	23.3	23.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
640-B-124078	2	B	23.4	23.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
641-B-124606	2	B	23.5	23.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
642-B-125134	2	B	23.6	23.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
643-B-125662	2	B	23.7	23.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
644-B-126190	2	B	23.8	23.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
645-B-126718	2	B	23.9	24.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
646-B-127246	2	B	24.0	24.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
647-B-127774	2	B	24.1	24.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
648-B-128302	2	B	24.2	24.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
649-B-128830	2	B	24.3	24.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
650-B-129358	2	B	24.4	24.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
651-B-129886	2	B	24.5	24.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
652-B-130414	2	B	24.6	24.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
653-B-130942	2	B	24.7	24.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
654-B-131470	2	B	24.8	24.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
655-B-131998	2	B	24.9	25.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
656-B-132526	2	B	25.0	25.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
657-B-133054	2	B	25.1	25.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
658-B-133582	2	B	25.2	25.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
659-B-134110	2	B	25.3	25.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
660-B-134638	2	B	25.4	25.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
661-B-135166	2	B	25.5	25.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
662-B-135694	2	B	25.6	25.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
663-B-136222	2	B	25.7	25.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
664-B-136750	2	B	25.8	25.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
665-B-137278	2	B	25.9	26.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
666-B-137806	2	B	26.0	26.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
667-B-138334	2	B	26.1	26.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
668-B-138862	2	B	26.2	26.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
669-B-139390	2	B	26.3	26.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
670-B-139918	2	B	26.4	26.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
671-B-139930	2	B	26.5	26.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1015-C-528	3	C	0.0	0.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1016-C-1056	3	C	0.1	0.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1017-C-1584	3	C	0.2	0.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1018-C-2112	3	C	0.3	0.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1019-C-2640	3	C	0.4	0.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1020-C-3168	3	C	0.5	0.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1021-C-3696	3	C	0.6	0.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1022-C-4224	3	C	0.7	0.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1023-C-4752	3	C	0.8	0.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1024-C-5280	3	C	0.9	1.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1025-C-5808	3	C	1.0	1.1	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1026-C-6336	3	C	1.1	1.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1027-C-6864	3	C	1.2	1.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1028-C-7392	3	C	1.3	1.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1029-C-7920	3	C	1.4	1.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1030-C-8448	3	C	1.5	1.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1031-C-8976	3	C	1.6	1.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1032-C-9504	3	C	1.7	1.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1033-C-10032	3	C	1.8	1.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1034-C-10560	3	C	1.9	2.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1035-C-11088	3	C	2.0	2.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
1036-C-11616	3	C	2.1	2.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1037-C-12144	3	C	2.2	2.3	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1038-C-12672	3	C	2.3	2.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1039-C-13200	3	C	2.4	2.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1040-C-13728	3	C	2.5	2.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1041-C-14256	3	C	2.6	2.7	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1042-C-14784	3	C	2.7	2.8	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1043-C-15312	3	C	2.8	2.9	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1044-C-15840	3	C	2.9	3.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1045-C-16368	3	C	3.0	3.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1046-C-16896	3	C	3.1	3.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1047-C-17424	3	C	3.2	3.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1048-C-17952	3	C	3.3	3.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1049-C-18480	3	C	3.4	3.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1050-C-19008	3	C	3.5	3.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1051-C-19536	3	C	3.6	3.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1052-C-20064	3	C	3.7	3.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1053-C-20592	3	C	3.8	3.9	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1054-C-21120	3	C	3.9	4.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1055-C-21648	3	C	4.0	4.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1056-C-22176	3	C	4.1	4.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1057-C-22704	3	C	4.2	4.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1058-C-23232	3	C	4.3	4.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1059-C-23760	3	C	4.4	4.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1060-C-24288	3	C	4.5	4.6	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1061-C-24816	3	C	4.6	4.7	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1062-C-25344	3	C	4.7	4.8	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1063-C-25872	3	C	4.8	4.9	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1064-C-26400	3	C	4.9	5.0	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1065-C-26928	3	C	5.0	5.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1066-C-27456	3	C	5.1	5.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1067-C-27984	3	C	5.2	5.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1068-C-28512	3	C	5.3	5.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1069-C-29040	3	C	5.4	5.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1070-C-29568	3	C	5.5	5.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1071-C-30096	3	C	5.6	5.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1072-C-30624	3	C	5.7	5.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1073-C-31152	3	C	5.8	5.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1074-C-31680	3	C	5.9	6.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1075-C-32208	3	C	6.0	6.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1076-C-32736	3	C	6.1	6.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1077-C-33264	3	C	6.2	6.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1078-C-33792	3	C	6.3	6.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1079-C-34320	3	C	6.4	6.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1080-C-34848	3	C	6.5	6.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1081-C-35376	3	C	6.6	6.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1082-C-35904	3	C	6.7	6.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1083-C-36432	3	C	6.8	6.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1084-C-36960	3	C	6.9	7.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1085-C-37488	3	C	7.0	7.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1086-C-38016	3	C	7.1	7.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1087-C-38544	3	C	7.2	7.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1088-C-39072	3	C	7.3	7.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1089-C-39600	3	C	7.4	7.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1090-C-40128	3	C	7.5	7.6	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1091-C-40656	3	C	7.6	7.7	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1092-C-41183	3	C	7.7	7.8	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1093-C-41711	3	C	7.8	7.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1094-C-42239	3	C	7.9	8.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1095-C-42767	3	C	8.0	8.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1096-C-43295	3	C	8.1	8.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1097-C-43823	3	C	8.2	8.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1098-C-44351	3	C	8.3	8.4	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1099-C-44879	3	C	8.4	8.5	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1100-C-45407	3	C	8.5	8.6	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1101-C-45935	3	C	8.6	8.7	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1102-C-46463	3	C	8.7	8.8	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1103-C-46991	3	C	8.8	8.9	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1104-C-47519	3	C	8.9	9.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1105-C-48047	3	C	9.0	9.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
1106-C-48575	3	C	9.1	9.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1107-C-49103	3	C	9.2	9.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1108-C-49631	3	C	9.3	9.4	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1109-C-50159	3	C	9.4	9.5	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1110-C-50687	3	C	9.5	9.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1111-C-51215	3	C	9.6	9.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1112-C-51743	3	C	9.7	9.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1113-C-52271	3	C	9.8	9.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1114-C-52799	3	C	9.9	10.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1115-C-53327	3	C	10.0	10.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1116-C-53855	3	C	10.1	10.2	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1117-C-54383	3	C	10.2	10.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1118-C-54911	3	C	10.3	10.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1119-C-55439	3	C	10.4	10.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1120-C-55967	3	C	10.5	10.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1121-C-56495	3	C	10.6	10.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1122-C-57023	3	C	10.7	10.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1123-C-57551	3	C	10.8	10.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1124-C-58079	3	C	10.9	11.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1125-C-58607	3	C	11.0	11.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1126-C-59135	3	C	11.1	11.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1127-C-59663	3	C	11.2	11.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1128-C-60191	3	C	11.3	11.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1129-C-60719	3	C	11.4	11.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1130-C-61247	3	C	11.5	11.6	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1131-C-61775	3	C	11.6	11.7	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1132-C-62303	3	C	11.7	11.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1133-C-62831	3	C	11.8	11.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1134-C-63359	3	C	11.9	12.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1135-C-63887	3	C	12.0	12.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1136-C-64415	3	C	12.1	12.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1137-C-64943	3	C	12.2	12.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1138-C-65471	3	C	12.3	12.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1139-C-65999	3	C	12.4	12.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1140-C-66527	3	C	12.5	12.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1141-C-67055	3	C	12.6	12.7	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1142-C-67583	3	C	12.7	12.8	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1143-C-68111	3	C	12.8	12.9	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1144-C-68639	3	C	12.9	13.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1145-C-69167	3	C	13.0	13.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1146-C-69695	3	C	13.1	13.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1147-C-70223	3	C	13.2	13.3	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1148-C-70751	3	C	13.3	13.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1149-C-71279	3	C	13.4	13.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1150-C-71807	3	C	13.5	13.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1151-C-72335	3	C	13.6	13.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1152-C-72863	3	C	13.7	13.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1153-C-73391	3	C	13.8	13.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1154-C-73919	3	C	13.9	14.0	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1155-C-74447	3	C	14.0	14.1	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1156-C-74975	3	C	14.1	14.2	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1157-C-75503	3	C	14.2	14.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1158-C-76031	3	C	14.3	14.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1159-C-76559	3	C	14.4	14.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1160-C-77087	3	C	14.5	14.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1161-C-77615	3	C	14.6	14.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1162-C-78143	3	C	14.7	14.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1163-C-78671	3	C	14.8	14.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1164-C-79199	3	C	14.9	15.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1165-C-79727	3	C	15.0	15.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1166-C-80255	3	C	15.1	15.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1167-C-80783	3	C	15.2	15.3	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1168-C-81311	3	C	15.3	15.4	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1169-C-81839	3	C	15.4	15.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1170-C-82367	3	C	15.5	15.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1171-C-82895	3	C	15.6	15.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1172-C-83423	3	C	15.7	15.8	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1173-C-83951	3	C	15.8	15.9	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1174-C-84479	3	C	15.9	16.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1175-C-85007	3	C	16.0	16.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
1176-C-85535	3	C	16.1	16.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1177-C-86063	3	C	16.2	16.3	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1178-C-86591	3	C	16.3	16.4	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1179-C-87119	3	C	16.4	16.5	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1180-C-87647	3	C	16.5	16.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1181-C-88175	3	C	16.6	16.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1182-C-88703	3	C	16.7	16.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1183-C-89231	3	C	16.8	16.9	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1184-C-89759	3	C	16.9	17.0	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1185-C-90287	3	C	17.0	17.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1186-C-90815	3	C	17.1	17.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1187-C-91343	3	C	17.2	17.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1188-C-91871	3	C	17.3	17.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1189-C-92399	3	C	17.4	17.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1190-C-92927	3	C	17.5	17.6	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1191-C-93455	3	C	17.6	17.7	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1192-C-93983	3	C	17.7	17.8	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1193-C-94511	3	C	17.8	17.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1194-C-95039	3	C	17.9	18.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1195-C-95567	3	C	18.0	18.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1196-C-96095	3	C	18.1	18.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1197-C-96623	3	C	18.2	18.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1198-C-97151	3	C	18.3	18.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1199-C-97679	3	C	18.4	18.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1200-C-98207	3	C	18.5	18.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1201-C-98735	3	C	18.6	18.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1202-C-99263	3	C	18.7	18.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1203-C-99791	3	C	18.8	18.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1204-C-100319	3	C	18.9	19.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1205-C-100847	3	C	19.0	19.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1206-C-101375	3	C	19.1	19.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1207-C-101903	3	C	19.2	19.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1208-C-102431	3	C	19.3	19.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1209-C-102959	3	C	19.4	19.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1210-C-103487	3	C	19.5	19.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1211-C-104015	3	C	19.6	19.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1212-C-104543	3	C	19.7	19.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1213-C-105071	3	C	19.8	19.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1214-C-105599	3	C	19.9	20.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1215-C-106127	3	C	20.0	20.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1216-C-106655	3	C	20.1	20.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1217-C-107183	3	C	20.2	20.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1218-C-107711	3	C	20.3	20.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1219-C-108239	3	C	20.4	20.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1220-C-108767	3	C	20.5	20.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1221-C-109295	3	C	20.6	20.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1222-C-109823	3	C	20.7	20.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1223-C-110351	3	C	20.8	20.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1224-C-110879	3	C	20.9	21.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1225-C-111407	3	C	21.0	21.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1226-C-111935	3	C	21.1	21.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1227-C-112463	3	C	21.2	21.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1228-C-112991	3	C	21.3	21.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1229-C-113519	3	C	21.4	21.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1230-C-114047	3	C	21.5	21.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1231-C-114480	3	C	21.6	21.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1725-D-528	4	D	0.0	0.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1726-D-1056	4	D	0.1	0.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1727-D-1584	4	D	0.2	0.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1728-D-2112	4	D	0.3	0.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1729-D-2640	4	D	0.4	0.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1730-D-3168	4	D	0.5	0.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1731-D-3696	4	D	0.6	0.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1732-D-4224	4	D	0.7	0.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1733-D-4752	4	D	0.8	0.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1734-D-5280	4	D	0.9	1.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1735-D-5808	4	D	1.0	1.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1736-D-6336	4	D	1.1	1.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1737-D-6864	4	D	1.2	1.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1738-D-7392	4	D	1.3	1.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
1739-D-7920	4	D	1.4	1.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1740-D-8448	4	D	1.5	1.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1741-D-8976	4	D	1.6	1.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1742-D-9504	4	D	1.7	1.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1743-D-10032	4	D	1.8	1.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1744-D-10560	4	D	1.9	2.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1745-D-11088	4	D	2.0	2.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1746-D-11616	4	D	2.1	2.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1747-D-12144	4	D	2.2	2.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1748-D-12672	4	D	2.3	2.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1749-D-13200	4	D	2.4	2.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1750-D-13728	4	D	2.5	2.6	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1751-D-14256	4	D	2.6	2.7	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1752-D-14784	4	D	2.7	2.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1753-D-15312	4	D	2.8	2.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1754-D-15840	4	D	2.9	3.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1755-D-16368	4	D	3.0	3.1	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1756-D-16896	4	D	3.1	3.2	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1757-D-17424	4	D	3.2	3.3	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1758-D-17952	4	D	3.3	3.4	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1759-D-18480	4	D	3.4	3.5	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1760-D-19008	4	D	3.5	3.6	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1761-D-19536	4	D	3.6	3.7	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1762-D-20064	4	D	3.7	3.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1763-D-20592	4	D	3.8	3.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1764-D-21120	4	D	3.9	4.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1765-D-21648	4	D	4.0	4.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1766-D-22176	4	D	4.1	4.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1767-D-22704	4	D	4.2	4.3	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1768-D-23232	4	D	4.3	4.4	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1769-D-23760	4	D	4.4	4.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1770-D-24288	4	D	4.5	4.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1771-D-24816	4	D	4.6	4.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1772-D-25344	4	D	4.7	4.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1773-D-25872	4	D	4.8	4.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1774-D-26400	4	D	4.9	5.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1775-D-26928	4	D	5.0	5.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1776-D-27456	4	D	5.1	5.2	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1777-D-27984	4	D	5.2	5.3	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1778-D-28512	4	D	5.3	5.4	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1779-D-29040	4	D	5.4	5.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1780-D-29568	4	D	5.5	5.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1781-D-30096	4	D	5.6	5.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1782-D-30624	4	D	5.7	5.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1783-D-31152	4	D	5.8	5.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1784-D-31680	4	D	5.9	6.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1785-D-32208	4	D	6.0	6.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1786-D-32736	4	D	6.1	6.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1787-D-33264	4	D	6.2	6.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1788-D-33792	4	D	6.3	6.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1789-D-34320	4	D	6.4	6.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1790-D-34848	4	D	6.5	6.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1791-D-35376	4	D	6.6	6.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1792-D-35904	4	D	6.7	6.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1793-D-36432	4	D	6.8	6.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1794-D-36960	4	D	6.9	7.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1795-D-37488	4	D	7.0	7.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1796-D-38016	4	D	7.1	7.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1797-D-38544	4	D	7.2	7.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1798-D-39072	4	D	7.3	7.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1799-D-39600	4	D	7.4	7.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1800-D-40128	4	D	7.5	7.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1801-D-40656	4	D	7.6	7.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1802-D-41183	4	D	7.7	7.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1803-D-41711	4	D	7.8	7.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1804-D-42239	4	D	7.9	8.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1805-D-42767	4	D	8.0	8.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1806-D-43295	4	D	8.1	8.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1807-D-43823	4	D	8.2	8.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1808-D-44351	4	D	8.3	8.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
1809-D-44879	4	D	8.4	8.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1810-D-45407	4	D	8.5	8.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1811-D-45935	4	D	8.6	8.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1812-D-46463	4	D	8.7	8.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1813-D-46991	4	D	8.8	8.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1814-D-47519	4	D	8.9	9.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1815-D-48047	4	D	9.0	9.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1816-D-48575	4	D	9.1	9.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1817-D-49103	4	D	9.2	9.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1818-D-49631	4	D	9.3	9.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1819-D-50159	4	D	9.4	9.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1820-D-50687	4	D	9.5	9.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1821-D-51215	4	D	9.6	9.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1822-D-51743	4	D	9.7	9.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1823-D-52271	4	D	9.8	9.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1824-D-52799	4	D	9.9	10.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1825-D-53327	4	D	10.0	10.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1826-D-53855	4	D	10.1	10.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1827-D-54383	4	D	10.2	10.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1828-D-54911	4	D	10.3	10.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1829-D-55439	4	D	10.4	10.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1830-D-55967	4	D	10.5	10.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1831-D-56495	4	D	10.6	10.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1832-D-57023	4	D	10.7	10.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1833-D-57551	4	D	10.8	10.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1834-D-58079	4	D	10.9	11.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1835-D-58607	4	D	11.0	11.1	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1836-D-59135	4	D	11.1	11.2	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1837-D-59663	4	D	11.2	11.3	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1838-D-60191	4	D	11.3	11.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1839-D-60719	4	D	11.4	11.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1840-D-61247	4	D	11.5	11.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1841-D-61775	4	D	11.6	11.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1842-D-62303	4	D	11.7	11.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1843-D-62831	4	D	11.8	11.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1844-D-63359	4	D	11.9	12.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1845-D-63887	4	D	12.0	12.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1846-D-64415	4	D	12.1	12.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1847-D-64943	4	D	12.2	12.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1848-D-65471	4	D	12.3	12.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1849-D-65999	4	D	12.4	12.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1850-D-66527	4	D	12.5	12.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1851-D-67055	4	D	12.6	12.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1852-D-67583	4	D	12.7	12.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1853-D-68111	4	D	12.8	12.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1854-D-68639	4	D	12.9	13.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1855-D-69167	4	D	13.0	13.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1856-D-69695	4	D	13.1	13.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1857-D-70223	4	D	13.2	13.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1858-D-70751	4	D	13.3	13.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1859-D-71279	4	D	13.4	13.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1860-D-71807	4	D	13.5	13.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1861-D-72335	4	D	13.6	13.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1862-D-72863	4	D	13.7	13.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1863-D-73391	4	D	13.8	13.9	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1864-D-73919	4	D	13.9	14.0	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1865-D-74447	4	D	14.0	14.1	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
1866-D-74975	4	D	14.1	14.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1867-D-75503	4	D	14.2	14.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1868-D-76031	4	D	14.3	14.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1869-D-76559	4	D	14.4	14.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1870-D-77087	4	D	14.5	14.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1871-D-77615	4	D	14.6	14.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1872-D-78143	4	D	14.7	14.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1873-D-78671	4	D	14.8	14.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1874-D-79199	4	D	14.9	15.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1875-D-79727	4	D	15.0	15.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1876-D-80255	4	D	15.1	15.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1877-D-80783	4	D	15.2	15.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1878-D-81311	4	D	15.3	15.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
1879-D-81839	4	D	15.4	15.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1880-D-82367	4	D	15.5	15.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1881-D-82895	4	D	15.6	15.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1882-D-83423	4	D	15.7	15.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1883-D-83951	4	D	15.8	15.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1884-D-84479	4	D	15.9	16.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1885-D-85007	4	D	16.0	16.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1886-D-85535	4	D	16.1	16.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1887-D-86063	4	D	16.2	16.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1888-D-86591	4	D	16.3	16.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1889-D-87119	4	D	16.4	16.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1890-D-87647	4	D	16.5	16.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1891-D-88175	4	D	16.6	16.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1892-D-88703	4	D	16.7	16.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Oso Canyon Fm.	Undetermined	Low	Low
1893-D-89231	4	D	16.8	16.9	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Oso Canyon Fm.	Undetermined	Low	Low
1894-D-89759	4	D	16.9	17.0	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Oso Canyon Fm.	Undetermined	Low	Low
1895-D-90287	4	D	17.0	17.1	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Oso Canyon Fm	Undetermined	Low	Low
1896-D-90815	4	D	17.1	17.2	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Oso Canyon Fm.	Undetermined	Low	Low
1897-D-91343	4	D	17.2	17.3	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quail Lake Fm	Maximum	Moderate	Low
1898-D-91871	4	D	17.3	17.4	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quail Lake Fm.	Maximum	Moderate	Low
1899-D-92399	4	D	17.4	17.5	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quail Lake Fm.	Maximum	Low	Low
1900-D-92927	4	D	17.5	17.6	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1901-D-93455	4	D	17.6	17.7	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1902-D-93983	4	D	17.7	17.8	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1903-D-94511	4	D	17.8	17.9	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Oso Canyon Fm.	Undetermined	Low	Low
1904-D-95039	4	D	17.9	18.0	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Oso Canyon Fm.	Undetermined	Low	Low
1905-D-95567	4	D	18.0	18.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Oso Canyon Fm.	Undetermined	Low	Low
1906-D-96095	4	D	18.1	18.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1907-D-96623	4	D	18.2	18.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1908-D-97151	4	D	18.3	18.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1909-D-97679	4	D	18.4	18.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1910-D-98207	4	D	18.5	18.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1911-D-98735	4	D	18.6	18.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1912-D-99263	4	D	18.7	18.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1913-D-99791	4	D	18.8	18.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1914-D-100319	4	D	18.9	19.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1915-D-100847	4	D	19.0	19.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1916-D-101375	4	D	19.1	19.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1917-D-101903	4	D	19.2	19.3	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1918-D-102431	4	D	19.3	19.4	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1919-D-102959	4	D	19.4	19.5	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1920-D-103487	4	D	19.5	19.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1921-D-104015	4	D	19.6	19.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1922-D-104543	4	D	19.7	19.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1923-D-105071	4	D	19.8	19.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1924-D-105599	4	D	19.9	20.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1925-D-106127	4	D	20.0	20.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1926-D-106655	4	D	20.1	20.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1927-D-107183	4	D	20.2	20.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1928-D-107711	4	D	20.3	20.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1929-D-108239	4	D	20.4	20.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1930-D-108767	4	D	20.5	20.6	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1931-D-109295	4	D	20.6	20.7	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Land Slide Deposits	Minor	Low	Low
1932-D-109823	4	D	20.7	20.8	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Land Slide Deposits	Minor	Low	Low
1933-D-110351	4	D	20.8	20.9	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Land Slide Deposits	Minor	Low	Low
1934-D-110879	4	D	20.9	21.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Land Slide Deposits	Minor	Low	Low
1935-D-111407	4	D	21.0	21.1	20-30	None	4	Steel Lattice	0.724	0.724	0.56	0.85	Land Slide Deposits	Minor	Low	Low
1936-D-111935	4	D	21.1	21.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Land Slide Deposits	Minor	Low	Low
1937-D-112463	4	D	21.2	21.3	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Land Slide Deposits	Minor	Low	Low
1938-D-112991	4	D	21.3	21.4	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Land Slide Deposits	Minor	Low	Low
1939-D-113519	4	D	21.4	21.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Land Slide Deposits	Minor	Low	Low
1940-D-114047	4	D	21.5	21.6	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Land Slide Deposits	Minor	Low	Low
1941-D-114575	4	D	21.6	21.7	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Land Slide Deposits	Minor	Low	Low
1942-D-115103	4	D	21.7	21.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Land Slide Deposits	Minor	Low	Low
1943-D-115631	4	D	21.8	21.9	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1944-D-116159	4	D	21.9	22.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1945-D-116687	4	D	22.0	22.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1946-D-117215	4	D	22.1	22.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1947-D-117743	4	D	22.2	22.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1948-D-118271	4	D	22.3	22.4	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
1949-D-118799	4	D	22.4	22.5	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Hungry Valley Fm.	Maximum	Moderate	Low
1950-D-119327	4	D	22.5	22.6	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Hungry Valley Fm.	Maximum	Moderate	Low
1951-D-119855	4	D	22.6	22.7	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Hungry Valley Fm.	Maximum	Moderate	Low
1952-D-120383	4	D	22.7	22.8	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1953-D-120911	4	D	22.8	22.9	>30	None	5	Steel Lattice	0.724	0.724	0.85	1.24	Granitic Rocks	No	NI	NI
1954-D-121439	4	D	22.9	23.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1955-D-121967	4	D	23.0	23.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1956-D-122495	4	D	23.1	23.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1957-D-123023	4	D	23.2	23.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1958-D-123550	4	D	23.3	23.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1959-D-124078	4	D	23.4	23.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1960-D-124606	4	D	23.5	23.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1961-D-125134	4	D	23.6	23.7	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1962-D-125662	4	D	23.7	23.8	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1963-D-126190	4	D	23.8	23.9	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1964-D-126718	4	D	23.9	24.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1965-D-127246	4	D	24.0	24.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1966-D-127774	4	D	24.1	24.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1967-D-128302	4	D	24.2	24.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1968-D-128830	4	D	24.3	24.4	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1969-D-129358	4	D	24.4	24.5	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1970-D-129886	4	D	24.5	24.6	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1971-D-130414	4	D	24.6	24.7	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1972-D-130942	4	D	24.7	24.8	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1973-D-131470	4	D	24.8	24.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1974-D-131998	4	D	24.9	25.0	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1975-D-132526	4	D	25.0	25.1	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1976-D-133054	4	D	25.1	25.2	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1977-D-133582	4	D	25.2	25.3	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1978-D-134110	4	D	25.3	25.4	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1979-D-134638	4	D	25.4	25.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1980-D-135166	4	D	25.5	25.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1981-D-135694	4	D	25.6	25.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1982-D-136222	4	D	25.7	25.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1983-D-136750	4	D	25.8	25.9	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1984-D-137278	4	D	25.9	26.0	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1985-D-137806	4	D	26.0	26.1	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1986-D-138334	4	D	26.1	26.2	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1987-D-138862	4	D	26.2	26.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1988-D-139390	4	D	26.3	26.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1989-D-139918	4	D	26.4	26.5	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1990-D-140446	4	D	26.5	26.6	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1991-D-140974	4	D	26.6	26.7	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1992-D-141502	4	D	26.7	26.8	>30	None	6	Steel Lattice	0.724	0.724	1.24	1.63	Ridge Route Fm.	Maximum	High	Low
1993-D-142030	4	D	26.8	26.9	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1994-D-142558	4	D	26.9	27.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1995-D-143086	4	D	27.0	27.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1996-D-143614	4	D	27.1	27.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1997-D-144142	4	D	27.2	27.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1998-D-144670	4	D	27.3	27.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
1999-D-145198	4	D	27.4	27.5	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2000-D-145726	4	D	27.5	27.6	>30	None	6	Steel Lattice	0.724	0.724	1.24	1.63	Ridge Route Fm.	Maximum	High	Low
2001-D-146254	4	D	27.6	27.7	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2002-D-146782	4	D	27.7	27.8	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2003-D-147310	4	D	27.8	27.9	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2004-D-147838	4	D	27.9	28.0	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2005-D-148366	4	D	28.0	28.1	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2006-D-148894	4	D	28.1	28.2	>30	None	6	Steel Lattice	0.724	0.724	1.24	1.63	Ridge Route Fm.	Maximum	High	Low
2007-D-149422	4	D	28.2	28.3	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2008-D-149950	4	D	28.3	28.4	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2009-D-150478	4	D	28.4	28.5	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2010-D-151006	4	D	28.5	28.6	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2011-D-151534	4	D	28.6	28.7	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2012-D-152062	4	D	28.7	28.8	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2013-D-152590	4	D	28.8	28.9	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2014-D-153118	4	D	28.9	29.0	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2015-D-153646	4	D	29.0	29.1	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2016-D-154174	4	D	29.1	29.2	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2017-D-154702	4	D	29.2	29.3	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2018-D-155230	4	D	29.3	29.4	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
2019-D-155758	4	D	29.4	29.5	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2020-D-156286	4	D	29.5	29.6	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2021-D-156814	4	D	29.6	29.7	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2022-D-157342	4	D	29.7	29.8	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2023-D-157870	4	D	29.8	29.9	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2024-D-158398	4	D	29.9	30.0	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2025-D-158926	4	D	30.0	30.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2026-D-159454	4	D	30.1	30.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2027-D-159982	4	D	30.2	30.3	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2028-D-160510	4	D	30.3	30.4	>30	None	5	Steel Lattice	0.724	0.724	0.85	1.24	Ridge Route Fm.	Maximum	High	Low
2029-D-161038	4	D	30.4	30.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Peace Valley Fm.	Maximum	Moderate	Low
2030-D-161566	4	D	30.5	30.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2031-D-162094	4	D	30.6	30.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2032-D-162622	4	D	30.7	30.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Peace Valley Fm.	Maximum	Moderate	Low
2033-D-163150	4	D	30.8	30.9	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2034-D-163678	4	D	30.9	31.0	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2035-D-164206	4	D	31.0	31.1	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2036-D-164734	4	D	31.1	31.2	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2037-D-165262	4	D	31.2	31.3	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2038-D-165790	4	D	31.3	31.4	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2039-D-166318	4	D	31.4	31.5	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2040-D-166846	4	D	31.5	31.6	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2041-D-167374	4	D	31.6	31.7	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2042-D-167902	4	D	31.7	31.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2043-D-168430	4	D	31.8	31.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2044-D-168958	4	D	31.9	32.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Peace Valley Fm.	Maximum	Moderate	Low
2045-D-169486	4	D	32.0	32.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Peace Valley Fm.	Maximum	Moderate	Low
2046-D-170014	4	D	32.1	32.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2047-D-170542	4	D	32.2	32.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2048-D-171070	4	D	32.3	32.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2049-D-171598	4	D	32.4	32.5	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2050-D-172126	4	D	32.5	32.6	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Ridge Route Fm.	Maximum	Low	Low
2051-D-172654	4	D	32.6	32.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2052-D-173182	4	D	32.7	32.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2053-D-173710	4	D	32.8	32.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2054-D-174238	4	D	32.9	33.0	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2055-D-174766	4	D	33.0	33.1	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2056-D-175294	4	D	33.1	33.2	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2057-D-175822	4	D	33.2	33.3	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2058-D-176350	4	D	33.3	33.4	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2059-D-176878	4	D	33.4	33.5	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2060-D-177406	4	D	33.5	33.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2061-D-177934	4	D	33.6	33.7	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2062-D-178462	4	D	33.7	33.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2063-D-178990	4	D	33.8	33.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2064-D-179518	4	D	33.9	34.0	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2065-D-180046	4	D	34.0	34.1	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2066-D-180574	4	D	34.1	34.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2067-D-181102	4	D	34.2	34.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2068-D-181630	4	D	34.3	34.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2069-D-182158	4	D	34.4	34.5	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
2070-D-182686	4	D	34.5	34.6	>30	None	5	Steel Lattice	0.724	0.724	0.85	1.24	Peace Valley Fm.	Maximum	High	Low
347-D-183214	4	D	34.6	34.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Peace Valley Fm.	Maximum	Moderate	Low
348-D-183742	4	D	34.7	34.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Peace Valley Fm.	Maximum	Moderate	Low
349-D-184270	4	D	34.8	34.9	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Peace Valley Fm.	Maximum	Moderate	Low
350-D-184798	4	D	34.9	35.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Peace Valley Fm.	Maximum	Moderate	Low
351-D-185326	4	D	35.0	35.1	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Peace Valley Fm.	Maximum	Moderate	Low
352-D-185854	4	D	35.1	35.2	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Peace Valley Fm.	Maximum	Moderate	Low
353-D-186382	4	D	35.2	35.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Peace Valley Fm.	Maximum	Moderate	Low
354-D-186910	4	D	35.3	35.4	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Peace Valley Fm.	Maximum	Moderate	Low
355-D-187438	4	D	35.4	35.5	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Peace Valley Fm.	Maximum	Moderate	Low
356-D-187966	4	D	35.5	35.6	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Peace Valley Fm.	Maximum	Moderate	Low
357-D-188494	4	D	35.6	35.7	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Peace Valley Fm.	Maximum	Moderate	Low
358-D-189022	4	D	35.7	35.8	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Peace Valley Fm.	Maximum	Moderate	Low
359-D-189550	4	D	35.8	35.9	20-30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Peace Valley Fm.	Maximum	Low	Low
360-D-190078	4	D	35.9	36.0	20-30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Peace Valley Fm.	Maximum	Low	Low
361-D-190606	4	D	36.0	36.1	10-20	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Peace Valley Fm.	Maximum	Low	Low
362-D-191134	4	D	36.1	36.2	20-30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Peace Valley Fm.	Maximum	Low	Low
363-D-191662	4	D	36.2	36.3	20-30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Peace Valley Fm.	Maximum	Low	Low
364-D-192190	4	D	36.3	36.4	10-20	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Peace Valley Fm.	Maximum	Low	Low

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
365-D-192718	4	D	36.4	36.5	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
366-D-193246	4	D	36.5	36.6	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
367-D-193774	4	D	36.6	36.7	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
368-D-194302	4	D	36.7	36.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
369-D-194830	4	D	36.8	36.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
370-D-195358	4	D	36.9	37.0	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
371-D-195886	4	D	37.0	37.1	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
372-D-196414	4	D	37.1	37.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
373-D-196942	4	D	37.2	37.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Ridge Route Fm.	Maximum	Moderate	Low
374-D-197470	4	D	37.3	37.4	>30	None	6	Steel Lattice	0.724	0.724	1.24	1.63	Ridge Route Fm.	Maximum	High	Low
375-D-197998	4	D	37.4	37.5	20-30	None	5	Steel Lattice	0.724	0.724	0.85	1.24	Ridge Route Fm.	Maximum	High	Low
376-D-198526	4	D	37.5	37.6	>30	None	6	Steel Lattice	0.724	0.724	1.24	1.63	Castaic Fm.	Maximum	High	Low
377-D-199054	4	D	37.6	37.7	20-30	None	5	Steel Lattice	0.724	0.724	0.85	1.24	Castaic Fm.	Maximum	High	Low
378-D-199582	4	D	37.7	37.8	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
379-D-200110	4	D	37.8	37.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
380-D-200638	4	D	37.9	38.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
381-D-201166	4	D	38.0	38.1	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
382-D-201694	4	D	38.1	38.2	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
383-D-202222	4	D	38.2	38.3	10-20	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
384-D-202750	4	D	38.3	38.4	10-20	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
385-D-203278	4	D	38.4	38.5	10-20	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
386-D-203806	4	D	38.5	38.6	20-30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
387-D-204334	4	D	38.6	38.7	20-30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
388-D-204862	4	D	38.7	38.8	>30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
389-D-205390	4	D	38.8	38.9	>30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
390-D-205917	4	D	38.9	39.0	>30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
391-D-206445	4	D	39.0	39.1	>30	None	6	Steel Lattice	0.724	0.724	1.24	1.63	Castaic Fm.	Maximum	High	Low
392-D-206973	4	D	39.1	39.2	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
393-D-207501	4	D	39.2	39.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
394-D-208029	4	D	39.3	39.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
395-D-208557	4	D	39.4	39.5	20-30	None	5	Steel Lattice	0.724	0.724	0.85	1.24	Castaic Fm.	Maximum	High	Low
396-D-209085	4	D	39.5	39.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
397-D-209613	4	D	39.6	39.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
398-D-210141	4	D	39.7	39.8	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
399-D-210669	4	D	39.8	39.9	10-20	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
400-D-211197	4	D	39.9	40.0	20-30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
401-D-211725	4	D	40.0	40.1	20-30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
402-D-212253	4	D	40.1	40.2	20-30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
403-D-212781	4	D	40.2	40.3	10-20	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
404-D-213309	4	D	40.3	40.4	10-20	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
405-D-213837	4	D	40.4	40.5	10-20	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
406-D-214365	4	D	40.5	40.6	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
407-D-214893	4	D	40.6	40.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
408-D-215421	4	D	40.7	40.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
409-D-215949	4	D	40.8	40.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
410-D-216477	4	D	40.9	41.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
411-D-217005	4	D	41.0	41.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
412-D-217533	4	D	41.1	41.2	20-30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
413-D-218061	4	D	41.2	41.3	20-30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
414-D-218589	4	D	41.3	41.4	20-30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
415-D-219117	4	D	41.4	41.5	20-30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
416-D-219645	4	D	41.5	41.6	20-30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
417-D-220173	4	D	41.6	41.7	10-20	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
418-D-220701	4	D	41.7	41.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
419-D-221229	4	D	41.8	41.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
420-D-221757	4	D	41.9	42.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
421-D-222285	4	D	42.0	42.1	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
422-D-222813	4	D	42.1	42.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
423-D-223341	4	D	42.2	42.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
424-D-223869	4	D	42.3	42.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
425-D-224397	4	D	42.4	42.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
426-D-224925	4	D	42.5	42.6	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
427-D-225453	4	D	42.6	42.7	10-20	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
428-D-225981	4	D	42.7	42.8	10-20	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
429-D-226509	4	D	42.8	42.9	10-20	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
430-D-227037	4	D	42.9	43.0	10-20	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
431-D-227565	4	D	43.0	43.1	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
432-D-228093	4	D	43.1	43.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
433-D-228621	4	D	43.2	43.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
434-D-229149	4	D	43.3	43.4	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
435-D-229677	4	D	43.4	43.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
436-D-230205	4	D	43.5	43.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
437-D-230733	4	D	43.6	43.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
438-D-231261	4	D	43.7	43.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
439-D-231789	4	D	43.8	43.9	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
440-D-232317	4	D	43.9	44.0	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
441-D-232845	4	D	44.0	44.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
442-D-233373	4	D	44.1	44.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
443-D-233901	4	D	44.2	44.3	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
444-D-234429	4	D	44.3	44.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
445-D-234957	4	D	44.4	44.5	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
446-D-235485	4	D	44.5	44.6	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
447-D-236013	4	D	44.6	44.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
448-D-236541	4	D	44.7	44.8	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
449-D-237069	4	D	44.8	44.9	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
450-D-237597	4	D	44.9	45.0	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
451-D-238125	4	D	45.0	45.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
452-D-238653	4	D	45.1	45.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
453-D-239181	4	D	45.2	45.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
454-D-239709	4	D	45.3	45.4	10-20	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
455-D-240237	4	D	45.4	45.5	20-30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
456-D-240765	4	D	45.5	45.6	20-30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
457-D-241293	4	D	45.6	45.7	>30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
458-D-241821	4	D	45.7	45.8	>30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
459-D-242349	4	D	45.8	45.9	20-30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
460-D-242877	4	D	45.9	46.0	20-30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
461-D-243405	4	D	46.0	46.1	20-30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Quaternary Alluvium	Minor	Low	Low
462-D-243933	4	D	46.1	46.2	20-30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Quaternary Alluvium	Minor	Low	Low
463-D-244461	4	D	46.2	46.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
464-D-244989	4	D	46.3	46.4	10-20	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
465-D-245517	4	D	46.4	46.5	10-20	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
466-D-246045	4	D	46.5	46.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Saugus Fm.	Maximum	Moderate	Low
467-D-246573	4	D	46.6	46.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
468-D-247101	4	D	46.7	46.8	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
469-D-247629	4	D	46.8	46.9	20-30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
470-D-248157	4	D	46.9	47.0	20-30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
471-D-248685	4	D	47.0	47.1	20-30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
472-D-249213	4	D	47.1	47.2	20-30	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	Castaic Fm.	Maximum	Low	Low
473-D-249741	4	D	47.2	47.3	20-30	None	5	Steel Lattice	0.724	0.724	0.85	1.24	Castaic Fm.	Maximum	High	Low
474-D-250269	4	D	47.3	47.4	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Saugus Fm.	Maximum	Moderate	Low
475-D-250797	4	D	47.4	47.5	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
476-D-251325	4	D	47.5	47.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Saugus Fm.	Maximum	Moderate	Low
477-D-251853	4	D	47.6	47.7	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
478-D-252381	4	D	47.7	47.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
479-D-252909	4	D	47.8	47.9	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
480-D-253437	4	D	47.9	48.0	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
481-D-253965	4	D	48.0	48.1	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
482-D-254349	4	D	48.1	48.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
903-E-528	5	E	0.0	0.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
904-E-1056	5	E	0.1	0.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
905-E-1584	5	E	0.2	0.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
906-E-2112	5	E	0.3	0.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
907-E-2640	5	E	0.4	0.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
908-E-3168	5	E	0.5	0.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
909-E-3696	5	E	0.6	0.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
910-E-4224	5	E	0.7	0.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
911-E-4752	5	E	0.8	0.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
912-E-5280	5	E	0.9	1.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
913-E-5808	5	E	1.0	1.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
914-E-6336	5	E	1.1	1.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
915-E-6864	5	E	1.2	1.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
916-E-7392	5	E	1.3	1.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
917-E-7920	5	E	1.4	1.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
918-E-8448	5	E	1.5	1.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
919-E-8976	5	E	1.6	1.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
920-E-9504	5	E	1.7	1.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
921-E-10032	5	E	1.8	1.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
922-E-10560	5	E	1.9	2.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
923-E-11088	5	E	2.0	2.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
924-E-11616	5	E	2.1	2.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
925-E-12144	5	E	2.2	2.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
926-E-12672	5	E	2.3	2.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
927-E-13200	5	E	2.4	2.5	0-10	None - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
928-E-13728	5	E	2.5	2.6	0-10	None - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
929-E-14256	5	E	2.6	2.7	0-10	None - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
930-E-14784	5	E	2.7	2.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
931-E-15312	5	E	2.8	2.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
932-E-15840	5	E	2.9	3.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
933-E-16368	5	E	3.0	3.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
934-E-16896	5	E	3.1	3.2	0-10	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
935-E-17424	5	E	3.2	3.3	0-10	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
936-E-17952	5	E	3.3	3.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
937-E-18480	5	E	3.4	3.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
938-E-19008	5	E	3.5	3.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
939-E-19536	5	E	3.6	3.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
940-E-20064	5	E	3.7	3.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
941-E-20592	5	E	3.8	3.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
942-E-21120	5	E	3.9	4.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
943-E-21648	5	E	4.0	4.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
944-E-22176	5	E	4.1	4.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
945-E-22704	5	E	4.2	4.3	0-10	None - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
946-E-23232	5	E	4.3	4.4	0-10	None - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
947-E-23760	5	E	4.4	4.5	0-10	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
948-E-24288	5	E	4.5	4.6	0-10	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
949-E-24816	5	E	4.6	4.7	0-10	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
950-E-25344	5	E	4.7	4.8	0-10	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
951-E-25872	5	E	4.8	4.9	0-10	None - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
952-E-26400	5	E	4.9	5.0	0-10	None - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
953-E-26928	5	E	5.0	5.1	0-10	None - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
954-E-27456	5	E	5.1	5.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
955-E-27984	5	E	5.2	5.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
956-E-28512	5	E	5.3	5.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
957-E-29040	5	E	5.4	5.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
958-E-29568	5	E	5.5	5.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
959-E-30096	5	E	5.6	5.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
960-E-30624	5	E	5.7	5.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
961-E-31152	5	E	5.8	5.9	0-10	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
962-E-31680	5	E	5.9	6.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
963-E-32208	5	E	6.0	6.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
964-E-32736	5	E	6.1	6.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
965-E-33264	5	E	6.2	6.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
966-E-33792	5	E	6.3	6.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
967-E-34320	5	E	6.4	6.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
968-E-34848	5	E	6.5	6.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
969-E-35376	5	E	6.6	6.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
970-E-35904	5	E	6.7	6.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
971-E-36432	5	E	6.8	6.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
972-E-36960	5	E	6.9	7.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
973-E-37488	5	E	7.0	7.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
974-E-38016	5	E	7.1	7.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
975-E-38544	5	E	7.2	7.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
976-E-39072	5	E	7.3	7.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
977-E-39600	5	E	7.4	7.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
978-E-40128	5	E	7.5	7.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
979-E-40656	5	E	7.6	7.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
980-E-41183	5	E	7.7	7.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
981-E-41711	5	E	7.8	7.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
982-E-42239	5	E	7.9	8.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
983-E-42767	5	E	8.0	8.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
984-E-43295	5	E	8.1	8.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
985-E-43823	5	E	8.2	8.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
986-E-44351	5	E	8.3	8.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
987-E-44879	5	E	8.4	8.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
988-E-45407	5	E	8.5	8.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
989-E-45935	5	E	8.6	8.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
990-E-46463	5	E	8.7	8.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
991-E-46991	5	E	8.8	8.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
992-E-47519	5	E	8.9	9.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
993-E-48047	5	E	9.0	9.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Granitic Rocks	No	NI	NI
994-E-48575	5	E	9.1	9.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Granitic Rocks	No	NI	NI

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
995-E-49103	5	E	9.2	9.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Granitic Rocks	No	NI	NI
996-E-49631	5	E	9.3	9.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Granitic Rocks	No	NI	NI
997-E-50159	5	E	9.4	9.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Granitic Rocks	No	NI	NI
998-E-50687	5	E	9.5	9.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Granitic Rocks	No	NI	NI
999-E-51215	5	E	9.6	9.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Granitic Rocks	No	NI	NI
1000-E-51743	5	E	9.7	9.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Granitic Rocks	No	NI	NI
1001-E-52271	5	E	9.8	9.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1002-E-52799	5	E	9.9	10.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1003-E-53327	5	E	10.0	10.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1004-E-53855	5	E	10.1	10.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1005-E-54383	5	E	10.2	10.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1006-E-54911	5	E	10.3	10.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1007-E-55439	5	E	10.4	10.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1008-E-55967	5	E	10.5	10.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1009-E-56495	5	E	10.6	10.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1010-E-57023	5	E	10.7	10.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1011-E-57551	5	E	10.8	10.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1012-E-58079	5	E	10.9	11.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1013-E-58607	5	E	11.0	11.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1014-E-59135	5	E	11.1	11.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1015-E-59573	5	E	11.2	11.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
2860-F1-528	7	F1	0.0	0.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
2861-F1-1056	7	F1	0.1	0.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
2862-F1-1584	7	F1	0.2	0.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
2863-F1-2112	7	F1	0.3	0.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
2864-F1-2640	7	F1	0.4	0.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
2865-F1-3168	7	F1	0.5	0.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
2866-F1-3696	7	F1	0.6	0.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
2867-F1-4224	7	F1	0.7	0.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
2868-F1-4381	7	F1	0.8	0.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
670-F2-528	8	F2	0.0	0.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
671-F2-1056	8	F2	0.1	0.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
672-F2-1584	8	F2	0.2	0.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
673-F2-2112	8	F2	0.3	0.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
674-F2-2640	8	F2	0.4	0.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
675-F2-3168	8	F2	0.5	0.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
676-F2-3696	8	F2	0.6	0.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
677-F2-4224	8	F2	0.7	0.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
678-F2-4752	8	F2	0.8	0.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
679-F2-5280	8	F2	0.9	1.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
680-F2-5808	8	F2	1.0	1.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
681-F2-6336	8	F2	1.1	1.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
682-F2-6864	8	F2	1.2	1.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
683-F2-7392	8	F2	1.3	1.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
684-F2-7920	8	F2	1.4	1.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
685-F2-8448	8	F2	1.5	1.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
686-F2-8976	8	F2	1.6	1.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
687-F2-9504	8	F2	1.7	1.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
688-F2-10032	8	F2	1.8	1.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
689-F2-10560	8	F2	1.9	2.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
690-F2-11088	8	F2	2.0	2.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
691-F2-11616	8	F2	2.1	2.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
692-F2-12144	8	F2	2.2	2.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
693-F2-12672	8	F2	2.3	2.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
694-F2-13200	8	F2	2.4	2.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
695-F2-13728	8	F2	2.5	2.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
696-F2-14256	8	F2	2.6	2.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
697-F2-14603	8	F2	2.7	2.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
2813-115-528	9	115	0.0	0.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
2814-115-1056	9	115	0.1	0.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
2815-115-1584	9	115	0.2	0.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
2816-115-2112	9	115	0.3	0.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
2817-115-2640	9	115	0.4	0.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
2818-115-3168	9	115	0.5	0.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
2819-115-3696	9	115	0.6	0.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
2820-115-4224	9	115	0.7	0.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
2821-115-4752	9	115	0.8	0.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
2822-115-5280	9	115	0.9	1.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
2823-115-5808	9	115	1.0	1.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
2824-115-6336	9	115	1.1	1.2	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
2825-115-6864	9	115	1.2	1.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
2826-115-7392	9	115	1.3	1.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
2827-115-7920	9	115	1.4	1.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
2828-115-8448	9	115	1.5	1.6	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
2829-115-8976	9	115	1.6	1.7	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
2830-115-9504	9	115	1.7	1.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
2831-115-10032	9	115	1.8	1.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
2832-115-10560	9	115	1.9	2.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
2833-115-11088	9	115	2.0	2.1	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
2834-115-11616	9	115	2.1	2.2	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
2835-115-12144	9	115	2.2	2.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
2836-115-12672	9	115	2.3	2.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
2837-115-13200	9	115	2.4	2.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
2838-115-13728	9	115	2.5	2.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
2839-115-14256	9	115	2.6	2.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
2840-115-14784	9	115	2.7	2.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
2841-115-15312	9	115	2.8	2.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
2842-115-15840	9	115	2.9	3.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
2843-115-16368	9	115	3.0	3.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
2844-115-16896	9	115	3.1	3.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
2845-115-17424	9	115	3.2	3.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
2846-115-17952	9	115	3.3	3.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
2847-115-18480	9	115	3.4	3.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
2848-115-19008	9	115	3.5	3.6	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
2849-115-19536	9	115	3.6	3.7	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
2850-115-20064	9	115	3.7	3.8	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
2851-115-20592	9	115	3.8	3.9	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
2852-115-21120	9	115	3.9	4.0	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
2853-115-21648	9	115	4.0	4.1	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
2854-115-22176	9	115	4.1	4.2	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
2855-115-22704	9	115	4.2	4.3	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Granitic Rocks	No	NI	NI
2856-115-23232	9	115	4.3	4.4	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Granitic Rocks	No	NI	NI
2857-115-23760	9	115	4.4	4.5	10-20	None	4	Steel Lattice	0.724	0.724	0.56	0.85	Granitic Rocks	No	NI	NI
2858-115-24288	9	115	4.5	4.6	10-20	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
2859-115-24816	9	115	4.6	4.7	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
2860-115-25339	9	115	4.7	4.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1513-G-528	6	G	0.0	0.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1514-G-1056	6	G	0.1	0.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1515-G-1584	6	G	0.2	0.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1516-G-2112	6	G	0.3	0.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1517-G-2640	6	G	0.4	0.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1518-G-3168	6	G	0.5	0.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1519-G-3696	6	G	0.6	0.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1520-G-4224	6	G	0.7	0.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1521-G-4752	6	G	0.8	0.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1522-G-5280	6	G	0.9	1.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1523-G-5808	6	G	1.0	1.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1524-G-6336	6	G	1.1	1.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1525-G-6864	6	G	1.2	1.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1526-G-7392	6	G	1.3	1.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1527-G-7920	6	G	1.4	1.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1528-G-8448	6	G	1.5	1.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1529-G-8976	6	G	1.6	1.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1530-G-9504	6	G	1.7	1.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1531-G-10032	6	G	1.8	1.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1532-G-10560	6	G	1.9	2.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1533-G-11088	6	G	2.0	2.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1534-G-11616	6	G	2.1	2.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1535-G-12144	6	G	2.2	2.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1536-G-12672	6	G	2.3	2.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1537-G-13200	6	G	2.4	2.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1538-G-13728	6	G	2.5	2.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1539-G-14256	6	G	2.6	2.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1540-G-14784	6	G	2.7	2.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1541-G-15312	6	G	2.8	2.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1542-G-15840	6	G	2.9	3.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1543-G-16368	6	G	3.0	3.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1544-G-16896	6	G	3.1	3.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1545-G-17424	6	G	3.2	3.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1546-G-17952	6	G	3.3	3.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
1547-G-18480	6	G	3.4	3.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1548-G-19008	6	G	3.5	3.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1549-G-19536	6	G	3.6	3.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1550-G-20064	6	G	3.7	3.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1551-G-20592	6	G	3.8	3.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1552-G-21120	6	G	3.9	4.0	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1553-G-21648	6	G	4.0	4.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1554-G-22176	6	G	4.1	4.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1555-G-22704	6	G	4.2	4.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1556-G-23232	6	G	4.3	4.4	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1557-G-23760	6	G	4.4	4.5	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1558-G-24288	6	G	4.5	4.6	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1559-G-24816	6	G	4.6	4.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1560-G-25344	6	G	4.7	4.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1561-G-25872	6	G	4.8	4.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1562-G-26400	6	G	4.9	5.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1563-G-26928	6	G	5.0	5.1	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Granitic Rocks	No	NI	NI
1564-G-27456	6	G	5.1	5.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Pelona Schist	No	NI	NI
1565-G-27984	6	G	5.2	5.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1566-G-28512	6	G	5.3	5.4	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Pelona Schist	No	NI	NI
1567-G-29040	6	G	5.4	5.5	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1568-G-29568	6	G	5.5	5.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1569-G-30096	6	G	5.6	5.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Anaverde Fm.	Maximum	Moderate	Low
1570-G-30624	6	G	5.7	5.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Anaverde Fm.	Maximum	Moderate	Low
1571-G-31152	6	G	5.8	5.9	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Anaverde Fm.	Maximum	Low	Low
1572-G-31680	6	G	5.9	6.0	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1573-G-32208	6	G	6.0	6.1	10-20	Use	1	Steel Lattice	0.584	0.584	-0.08	0.08	Quartz Diorite	No	NI	NI
1574-G-32736	6	G	6.1	6.2	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quartz Diorite	No	NI	NI
1575-G-33264	6	G	6.2	6.3	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quartz Diorite	No	NI	NI
1576-G-33792	6	G	6.3	6.4	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
1577-G-34320	6	G	6.4	6.5	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1578-G-34848	6	G	6.5	6.6	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1579-G-35376	6	G	6.6	6.7	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1580-G-35904	6	G	6.7	6.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1581-G-36432	6	G	6.8	6.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1582-G-36960	6	G	6.9	7.0	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1583-G-37488	6	G	7.0	7.1	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1584-G-38016	6	G	7.1	7.2	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1585-G-38544	6	G	7.2	7.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1586-G-39072	6	G	7.3	7.4	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1587-G-39600	6	G	7.4	7.5	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1588-G-40128	6	G	7.5	7.6	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1589-G-40656	6	G	7.6	7.7	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1590-G-41183	6	G	7.7	7.8	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
1591-G-41711	6	G	7.8	7.9	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1592-G-42239	6	G	7.9	8.0	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1593-G-42767	6	G	8.0	8.1	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
1594-G-43295	6	G	8.1	8.2	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
1595-G-43823	6	G	8.2	8.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quartz Diorite	No	NI	NI
1596-G-44351	6	G	8.3	8.4	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
1597-G-44879	6	G	8.4	8.5	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
1598-G-45407	6	G	8.5	8.6	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1599-G-45935	6	G	8.6	8.7	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1600-G-46463	6	G	8.7	8.8	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1601-G-46991	6	G	8.8	8.9	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1602-G-47519	6	G	8.9	9.0	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
1603-G-48047	6	G	9.0	9.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
1604-G-48575	6	G	9.1	9.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
1605-G-49103	6	G	9.2	9.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
1606-G-49631	6	G	9.3	9.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
1607-G-50159	6	G	9.4	9.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite/Gneiss	No	NI	NI
1608-G-50687	6	G	9.5	9.6	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite/Gneiss	No	NI	NI
1609-G-51215	6	G	9.6	9.7	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite/Gneiss	No	NI	NI
1610-G-51743	6	G	9.7	9.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite/Gneiss	No	NI	NI
1611-G-52271	6	G	9.8	9.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite/Gneiss	No	NI	NI
1612-G-52799	6	G	9.9	10.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite/Gneiss	No	NI	NI
1613-G-53327	6	G	10.0	10.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite/Gneiss	No	NI	NI
1614-G-53855	6	G	10.1	10.2	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite/Gneiss	No	NI	NI
1615-G-54383	6	G	10.2	10.3	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite/Gneiss	No	NI	NI
1616-G-54911	6	G	10.3	10.4	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite/Gneiss	No	NI	NI

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
1617-G-55439	6	G	10.4	10.5	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite/Gneiss	No	NI	NI
1618-G-55967	6	G	10.5	10.6	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite/Gneiss	No	NI	NI
1619-G-56495	6	G	10.6	10.7	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	M	Low
1620-G-57023	6	G	10.7	10.8	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1621-G-57551	6	G	10.8	10.9	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Gneiss	No	NI	NI
1622-G-58079	6	G	10.9	11.0	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
1623-G-58607	6	G	11.0	11.1	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quartz Diorite	No	NI	NI
1624-G-59135	6	G	11.1	11.2	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quartz Diorite	No	NI	NI
1625-G-59663	6	G	11.2	11.3	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quartz Diorite	No	NI	NI
1626-G-60191	6	G	11.3	11.4	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quartz Diorite	No	NI	NI
1627-G-60719	6	G	11.4	11.5	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quartz Diorite	No	NI	NI
1628-G-61247	6	G	11.5	11.6	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quartz Diorite	No	NI	NI
1629-G-61775	6	G	11.6	11.7	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quartz Diorite	No	NI	NI
1630-G-62303	6	G	11.7	11.8	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quartz Diorite	No	NI	NI
1631-G-62831	6	G	11.8	11.9	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Gneiss	No	NI	NI
1632-G-63359	6	G	11.9	12.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1633-G-63887	6	G	12.0	12.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1634-G-64415	6	G	12.1	12.2	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Gneiss	No	NI	NI
1635-G-64943	6	G	12.2	12.3	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Gneiss	No	NI	NI
1636-G-65471	6	G	12.3	12.4	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
1637-G-65999	6	G	12.4	12.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	San Francisquito Fm.	Major	Low	Low
1638-G-66527	6	G	12.5	12.6	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	San Francisquito Fm.	Major	Low	Low
1639-G-67055	6	G	12.6	12.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	San Francisquito Fm	Major	Low	Low
1640-G-67583	6	G	12.7	12.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	San Francisquito Fm.	Major	Low	Low
1641-G-68111	6	G	12.8	12.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	San Francisquito Fm.	Major	Low	Low
1642-G-68639	6	G	12.9	13.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	San Francisquito Fm.	Major	Low	Low
1643-G-69167	6	G	13.0	13.1	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	San Francisquito Fm.	Major	Low	Low
1644-G-69695	6	G	13.1	13.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	San Francisquito Fm	Major	Low	Low
1645-G-70223	6	G	13.2	13.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	San Francisquito Fm.	Major	Low	Low
1646-G-70751	6	G	13.3	13.4	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	San Francisquito Fm.	Major	Low	Low
1647-G-71279	6	G	13.4	13.5	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	San Francisquito Fm.	Major	Low	Low
1648-G-71807	6	G	13.5	13.6	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	San Francisquito Fm	Major	Low	Low
1649-G-72335	6	G	13.6	13.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	San Francisquito Fm.	Major	Low	Low
1650-G-72863	6	G	13.7	13.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	San Francisquito Fm.	Major	Low	Low
1651-G-73391	6	G	13.8	13.9	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Vasquez Fm.	Undetermined	Low	Low
1652-G-73919	6	G	13.9	14.0	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1653-G-74447	6	G	14.0	14.1	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1654-G-74975	6	G	14.1	14.2	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1655-G-75503	6	G	14.2	14.3	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1656-G-76031	6	G	14.3	14.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1657-G-76559	6	G	14.4	14.5	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1658-G-77087	6	G	14.5	14.6	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1659-G-77615	6	G	14.6	14.7	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1660-G-78143	6	G	14.7	14.8	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1661-G-78671	6	G	14.8	14.9	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1662-G-79199	6	G	14.9	15.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1663-G-79727	6	G	15.0	15.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1664-G-80255	6	G	15.1	15.2	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1665-G-80783	6	G	15.2	15.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1666-G-81311	6	G	15.3	15.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1667-G-81839	6	G	15.4	15.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1668-G-82367	6	G	15.5	15.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1669-G-82895	6	G	15.6	15.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1670-G-83423	6	G	15.7	15.8	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1671-G-83951	6	G	15.8	15.9	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1672-G-84479	6	G	15.9	16.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1673-G-85007	6	G	16.0	16.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1674-G-85535	6	G	16.1	16.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1675-G-86063	6	G	16.2	16.3	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1676-G-86591	6	G	16.3	16.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1677-G-87119	6	G	16.4	16.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1678-G-87647	6	G	16.5	16.6	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1679-G-88175	6	G	16.6	16.7	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1680-G-88703	6	G	16.7	16.8	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1681-G-89231	6	G	16.8	16.9	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1682-G-89759	6	G	16.9	17.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1683-G-90287	6	G	17.0	17.1	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1684-G-90815	6	G	17.1	17.2	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1685-G-91343	6	G	17.2	17.3	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1686-G-91871	6	G	17.3	17.4	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
1687-G-92399	6	G	17.4	17.5	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1688-G-92927	6	G	17.5	17.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1689-G-93455	6	G	17.6	17.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1690-G-93983	6	G	17.7	17.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1691-G-94511	6	G	17.8	17.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1692-G-95039	6	G	17.9	18.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1693-G-95567	6	G	18.0	18.1	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1694-G-96095	6	G	18.1	18.2	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1695-G-96623	6	G	18.2	18.3	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1696-G-97151	6	G	18.3	18.4	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1697-G-97679	6	G	18.4	18.5	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1698-G-98207	6	G	18.5	18.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1699-G-98735	6	G	18.6	18.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1700-G-99263	6	G	18.7	18.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1701-G-99791	6	G	18.8	18.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1702-G-100319	6	G	18.9	19.0	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1703-G-100847	6	G	19.0	19.1	10-20	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1704-G-101375	6	G	19.1	19.2	10-20	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1705-G-101903	6	G	19.2	19.3	10-20	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	Saugus Fm.	Maximum	Moderate	Low
1706-G-102431	6	G	19.3	19.4	10-20	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	Saugus Fm.	Maximum	Moderate	Low
1707-G-102959	6	G	19.4	19.5	20-30	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	Saugus Fm.	Maximum	Moderate	Low
1708-G-103487	6	G	19.5	19.6	20-30	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	Saugus Fm.	Maximum	Moderate	Low
1709-G-104015	6	G	19.6	19.7	20-30	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	Saugus Fm.	Maximum	Moderate	Low
1710-G-104543	6	G	19.7	19.8	10-20	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	Saugus Fm.	Maximum	Moderate	Low
1711-G-105071	6	G	19.8	19.9	0-10	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	Saugus Fm.	Maximum	Moderate	Low
1712-G-105599	6	G	19.9	20.0	0-10	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	Saugus Fm.	Maximum	Moderate	Low
1713-G-106127	6	G	20.0	20.1	0-10	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	Saugus Fm.	Maximum	Moderate	Low
1714-G-106655	6	G	20.1	20.2	0-10	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	Saugus Fm.	Maximum	Moderate	Low
1715-G-107183	6	G	20.2	20.3	0-10	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	Saugus Fm.	Maximum	Moderate	Low
1716-G-107711	6	G	20.3	20.4	10-20	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	Saugus Fm.	Maximum	Moderate	Low
1717-G-108239	6	G	20.4	20.5	10-20	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	Saugus Fm.	Maximum	Moderate	Low
1718-G-108767	6	G	20.5	20.6	10-20	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	Saugus Fm.	Maximum	Moderate	Low
1719-G-109295	6	G	20.6	20.7	20-30	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	Saugus Fm.	Maximum	Moderate	Low
1720-G-109823	6	G	20.7	20.8	20-30	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	Saugus Fm	Maximum	Moderate	Low
1721-G-110351	6	G	20.8	20.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Saugus Fm.	Maximum	Moderate	Low
1722-G-110879	6	G	20.9	21.0	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1723-G-111407	6	G	21.0	21.1	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1724-G-111935	6	G	21.1	21.2	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1725-G-112086	6	G	21.2	21.2	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1-GV-528		GV	0.0	0.1	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
2-GV-1056		GV	0.1	0.2	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
3-GV-1584		GV	0.2	0.3	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
4-GV-2112		GV	0.3	0.4	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
5-GV-2640		GV	0.4	0.5	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
6-GV-3168		GV	0.5	0.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
7-GV-3696		GV	0.6	0.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
8-GV-4224		GV	0.7	0.8	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
9-GV-4752		GV	0.8	0.9	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
10-GV-5280		GV	0.9	1.0	20-30	None	5	Steel Lattice	0.724	0.724	0.85	1.24	Quartz Diorite	No	NI	NI
11-GV-5808		GV	1.0	1.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
12-GV-6336		GV	1.1	1.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
13-GV-6864		GV	1.2	1.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
14-GV-7392		GV	1.3	1.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
15-GV-7920		GV	1.4	1.5	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
16-GV-8448		GV	1.5	1.6	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
17-GV-8976		GV	1.6	1.7	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
18-GV-9504		GV	1.7	1.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
19-GV-10032		GV	1.8	1.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
20-GV-10560		GV	1.9	2.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
21-GV-11088		GV	2.0	2.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
22-GV-11616		GV	2.1	2.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
23-GV-12144		GV	2.2	2.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
24-GV-12672		GV	2.3	2.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
25-GV-13200		GV	2.4	2.5	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
26-GV-13728		GV	2.5	2.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
27-GV-14256		GV	2.6	2.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
28-GV-14784		GV	2.7	2.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
29-GV-15312		GV	2.8	2.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
30-GV-15840		GV	2.9	3.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
31-GV-16368		GV	3.0	3.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
32-GV-16896		GV	3.1	3.2	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
33-GV-17424		GV	3.2	3.3	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
34-GV-17952		GV	3.3	3.4	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
35-GV-18480		GV	3.4	3.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
36-GV-19008		GV	3.5	3.6	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
37-GV-19536		GV	3.6	3.7	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
38-GV-20064		GV	3.7	3.8	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
39-GV-20592		GV	3.8	3.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
40-GV-21120		GV	3.9	4.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
41-GV-21648		GV	4.0	4.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
42-GV-22176		GV	4.1	4.2	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
43-GV-22704		GV	4.2	4.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
44-GV-23232		GV	4.3	4.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
45-GV-23760		GV	4.4	4.5	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
46-GV-24288		GV	4.5	4.6	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
47-GV-24816		GV	4.6	4.7	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
48-GV-25344		GV	4.7	4.8	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
49-GV-25872		GV	4.8	4.9	>30	None	6	Steel Lattice	0.724	0.724	1.24	1.63	Gneiss	No	NI	NI
50-GV-26400		GV	4.9	5.0	>30	None	6	Steel Lattice	0.724	0.724	1.24	1.63	Gneiss	No	NI	NI
51-GV-26928		GV	5.0	5.1	>30	None	6	Steel Lattice	0.724	0.724	1.24	1.63	Gneiss	No	NI	NI
52-GV-27456		GV	5.1	5.2	20-30	None	5	Steel Lattice	0.724	0.724	0.85	1.24	Gneiss	No	NI	NI
53-GV-27984		GV	5.2	5.3	10-20	None	4	Steel Lattice	0.724	0.724	0.56	0.85	Gneiss	No	NI	NI
54-GV-28512		GV	5.3	5.4	10-20	None	4	Steel Lattice	0.724	0.724	0.56	0.85	Gneiss	No	NI	NI
55-GV-29040		GV	5.4	5.5	20-30	None	5	Steel Lattice	0.724	0.724	0.85	1.24	Gneiss	No	NI	NI
56-GV-29568		GV	5.5	5.6	20-30	None	5	Steel Lattice	0.724	0.724	0.85	1.24	Gneiss	No	NI	NI
57-GV-30096		GV	5.6	5.7	>30	None	6	Steel Lattice	0.724	0.724	1.24	1.63	Quartz Diorite	No	NI	NI
58-GV-30624		GV	5.7	5.8	>30	None	6	Steel Lattice	0.724	0.724	1.24	1.63	Quartz Diorite	No	NI	NI
59-GV-31152		GV	5.8	5.9	>30	None	6	Steel Lattice	0.724	0.724	1.24	1.63	Quartz Diorite	No	NI	NI
60-GV-31680		GV	5.9	6.0	>30	None	6	Steel Lattice	0.724	0.724	1.24	1.63	Quartz Diorite	No	NI	NI
61-GV-32208		GV	6.0	6.1	10-20	None	4	Steel Lattice	0.724	0.724	0.56	0.85	Older Alluvium	Undetermined	Moderate	Low
62-GV-32736		GV	6.1	6.2	10-20	None	4	Steel Lattice	0.724	0.724	0.56	0.85	Older Alluvium	Undetermined	Moderate	Low
63-GV-33264		GV	6.2	6.3	10-20	None	4	Steel Lattice	0.724	0.724	0.56	0.85	Older Alluvium	Undetermined	Moderate	Low
64-GV-33792		GV	6.3	6.4	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
65-GV-34247		GV	6.4	6.5	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
2868-H1-528	10	H1	0.0	0.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
2869-H1-1056	10	H1	0.1	0.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
2870-H1-1584	10	H1	0.2	0.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
2871-H1-2112	10	H1	0.3	0.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
2872-H1-2640	10	H1	0.4	0.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
2873-H1-3168	10	H1	0.5	0.6	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
2874-H1-3696	10	H1	0.6	0.7	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
2875-H1-4224	10	H1	0.7	0.8	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
2876-H1-4752	10	H1	0.8	0.9	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
2877-H1-5280	10	H1	0.9	1.0	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
2878-H1-5808	10	H1	1.0	1.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
2879-H1-6336	10	H1	1.1	1.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
2880-H1-6864	10	H1	1.2	1.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
2881-H1-7392	10	H1	1.3	1.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
2882-H1-7920	10	H1	1.4	1.5	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
2883-H1-8448	10	H1	1.5	1.6	0-10	None	3	Steel Lattice	0.584	0.584	0.27	0.56	Quaternary Alluvium	Minor	Low	Low
2884-H1-8976	10	H1	1.6	1.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
2885-H1-9504	10	H1	1.7	1.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
2886-H1-10032	10	H1	1.8	1.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
2887-H1-10560	10	H1	1.9	2.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
2888-H1-11088	10	H1	2.0	2.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
2889-H1-11616	10	H1	2.1	2.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
2890-H1-12144	10	H1	2.2	2.3	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
2891-H1-12672	10	H1	2.3	2.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
2892-H1-13200	10	H1	2.4	2.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
2893-H1-13728	10	H1	2.5	2.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
2894-H1-14256	10	H1	2.6	2.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
2895-H1-14291	10	H1	2.7	2.7	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
697-H2-528	11	H2	0.0	0.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
698-H2-1056	11	H2	0.1	0.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
699-H2-1584	11	H2	0.2	0.3	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
700-H2-2112	11	H2	0.3	0.4	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
701-H2-2640	11	H2	0.4	0.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
702-H2-3168	11	H2	0.5	0.6	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
703-H2-3696	11	H2	0.6	0.7	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
704-H2-4224	11	H2	0.7	0.8	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
705-H2-4752	11	H2	0.8	0.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
706-H2-5280	11	H2	0.9	1.0	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
707-H2-5808	11	H2	1.0	1.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
708-H2-6336	11	H2	1.1	1.2	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Anaverde Fm.	Maximum	Moderate	Low
709-H2-6864	11	H2	1.2	1.3	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Anaverde Fm.	Maximum	Moderate	Low
710-H2-7392	11	H2	1.3	1.4	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Anaverde Fm.	Maximum	Moderate	Low
711-H2-7920	11	H2	1.4	1.5	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Anaverde Fm.	Maximum	Moderate	Low
712-H2-8448	11	H2	1.5	1.6	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
713-H2-8976	11	H2	1.6	1.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
714-H2-9504	11	H2	1.7	1.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
715-H2-10032	11	H2	1.8	1.9	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
716-H2-10560	11	H2	1.9	2.0	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
717-H2-11088	11	H2	2.0	2.1	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
718-H2-11616	11	H2	2.1	2.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
719-H2-12144	11	H2	2.2	2.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
720-H2-12672	11	H2	2.3	2.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite	No	NI	NI
721-H2-13200	11	H2	2.4	2.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quartz Diorite/Gneiss	No	NI	NI
722-H2-13728	11	H2	2.5	2.6	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
723-H2-14256	11	H2	2.6	2.7	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
724-H2-14784	11	H2	2.7	2.8	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
725-H2-15312	11	H2	2.8	2.9	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
726-H2-15840	11	H2	2.9	3.0	>30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
727-H2-16368	11	H2	3.0	3.1	>30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
728-H2-16896	11	H2	3.1	3.2	>30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
729-H2-17424	11	H2	3.2	3.3	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
730-H2-17952	11	H2	3.3	3.4	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
731-H2-18480	11	H2	3.4	3.5	10-20	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
732-H2-19008	11	H2	3.5	3.6	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
733-H2-19536	11	H2	3.6	3.7	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
734-H2-20064	11	H2	3.7	3.8	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
735-H2-20592	11	H2	3.8	3.9	>30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
736-H2-21120	11	H2	3.9	4.0	>30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
737-H2-21648	11	H2	4.0	4.1	>30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
738-H2-22176	11	H2	4.1	4.2	>30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
739-H2-22704	11	H2	4.2	4.3	>30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
740-H2-23232	11	H2	4.3	4.4	>30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
741-H2-23760	11	H2	4.4	4.5	>30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
742-H2-24288	11	H2	4.5	4.6	>30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
743-H2-24816	11	H2	4.6	4.7	>30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
744-H2-25344	11	H2	4.7	4.8	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
745-H2-25872	11	H2	4.8	4.9	>30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
746-H2-26400	11	H2	4.9	5.0	>30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
747-H2-26928	11	H2	5.0	5.1	10-20	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
748-H2-27456	11	H2	5.1	5.2	10-20	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
749-H2-27984	11	H2	5.2	5.3	20-30	Use	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
750-H2-28512	11	H2	5.3	5.4	20-30	Use	H	Steel Lattice	0.4	0.4	0.043	0.043	Quartz Diorite/Gneiss	No	NI	NI
751-H2-29040	11	H2	5.4	5.5	>30	Use	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
752-H2-29568	11	H2	5.5	5.6	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
753-H2-30096	11	H2	5.6	5.7	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
754-H2-30624	11	H2	5.7	5.8	>30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
755-H2-31152	11	H2	5.8	5.9	>30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
756-H2-31680	11	H2	5.9	6.0	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
757-H2-32208	11	H2	6.0	6.1	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
758-H2-32736	11	H2	6.1	6.2	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
759-H2-33264	11	H2	6.2	6.3	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
760-H2-33792	11	H2	6.3	6.4	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
761-H2-34320	11	H2	6.4	6.5	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
762-H2-34848	11	H2	6.5	6.6	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
763-H2-35376	11	H2	6.6	6.7	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
764-H2-35904	11	H2	6.7	6.8	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
765-H2-36432	11	H2	6.8	6.9	10-20	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
766-H2-36960	11	H2	6.9	7.0	10-20	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
767-H2-37488	11	H2	7.0	7.1	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
768-H2-38016	11	H2	7.1	7.2	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
769-H2-38544	11	H2	7.2	7.3	10-20	Use	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
770-H2-39072	11	H2	7.3	7.4	20-30	Use	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
771-H2-39600	11	H2	7.4	7.5	20-30	Use	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
772-H2-40128	11	H2	7.5	7.6	20-30	Use	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
773-H2-40656	11	H2	7.6	7.7	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
774-H2-41183	11	H2	7.7	7.8	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
775-H2-41711	11	H2	7.8	7.9	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
776-H2-42239	11	H2	7.9	8.0	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
777-H2-42767	11	H2	8.0	8.1	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
778-H2-43295	11	H2	8.1	8.2	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
779-H2-43823	11	H2	8.2	8.3	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
780-H2-44351	11	H2	8.3	8.4	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
781-H2-44879	11	H2	8.4	8.5	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
782-H2-45407	11	H2	8.5	8.6	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
783-H2-45935	11	H2	8.6	8.7	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
784-H2-46463	11	H2	8.7	8.8	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
785-H2-46991	11	H2	8.8	8.9	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
786-H2-47519	11	H2	8.9	9.0	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
787-H2-48047	11	H2	9.0	9.1	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
788-H2-48575	11	H2	9.1	9.2	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
789-H2-49103	11	H2	9.2	9.3	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
790-H2-49631	11	H2	9.3	9.4	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
791-H2-50159	11	H2	9.4	9.5	>30	Use	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
792-H2-50687	11	H2	9.5	9.6	>30	Use	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
793-H2-51215	11	H2	9.6	9.7	>30	Use	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
794-H2-51743	11	H2	9.7	9.8	20-30	Use	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
795-H2-52271	11	H2	9.8	9.9	20-30	Use	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
796-H2-52799	11	H2	9.9	10.0	20-30	Use	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
797-H2-53327	11	H2	10.0	10.1	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
798-H2-53855	11	H2	10.1	10.2	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
799-H2-54383	11	H2	10.2	10.3	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
800-H2-54911	11	H2	10.3	10.4	>30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
801-H2-55439	11	H2	10.4	10.5	>30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
802-H2-55967	11	H2	10.5	10.6	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
803-H2-56495	11	H2	10.6	10.7	>30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
804-H2-57023	11	H2	10.7	10.8	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
805-H2-57551	11	H2	10.8	10.9	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
806-H2-58079	11	H2	10.9	11.0	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
807-H2-58607	11	H2	11.0	11.1	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
808-H2-59135	11	H2	11.1	11.2	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
809-H2-59663	11	H2	11.2	11.3	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
810-H2-60191	11	H2	11.3	11.4	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
811-H2-60719	11	H2	11.4	11.5	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
812-H2-61247	11	H2	11.5	11.6	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
813-H2-61775	11	H2	11.6	11.7	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
814-H2-62303	11	H2	11.7	11.8	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
815-H2-62831	11	H2	11.8	11.9	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
816-H2-63359	11	H2	11.9	12.0	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
817-H2-63887	11	H2	12.0	12.1	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
818-H2-64415	11	H2	12.1	12.2	10-20	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
819-H2-64943	11	H2	12.2	12.3	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
820-H2-65471	11	H2	12.3	12.4	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
821-H2-65999	11	H2	12.4	12.5	>30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
822-H2-66527	11	H2	12.5	12.6	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
823-H2-67055	11	H2	12.6	12.7	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
824-H2-67583	11	H2	12.7	12.8	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
825-H2-68111	11	H2	12.8	12.9	>30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
826-H2-68639	11	H2	12.9	13.0	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
827-H2-69167	11	H2	13.0	13.1	>30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
828-H2-69695	11	H2	13.1	13.2	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
829-H2-70223	11	H2	13.2	13.3	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
830-H2-70751	11	H2	13.3	13.4	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
831-H2-71279	11	H2	13.4	13.5	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
832-H2-71807	11	H2	13.5	13.6	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
833-H2-72335	11	H2	13.6	13.7	>30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
834-H2-72863	11	H2	13.7	13.8	>30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
835-H2-73391	11	H2	13.8	13.9	>30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
836-H2-73919	11	H2	13.9	14.0	>30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
837-H2-74447	11	H2	14.0	14.1	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
838-H2-74975	11	H2	14.1	14.2	>30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
839-H2-75503	11	H2	14.2	14.3	>30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
840-H2-76031	11	H2	14.3	14.4	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
841-H2-76559	11	H2	14.4	14.5	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
842-H2-77087	11	H2	14.5	14.6	10-20	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
843-H2-77615	11	H2	14.6	14.7	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
844-H2-78143	11	H2	14.7	14.8	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
845-H2-78671	11	H2	14.8	14.9	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
846-H2-79199	11	H2	14.9	15.0	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
847-H2-79727	11	H2	15.0	15.1	>30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
848-H2-80255	11	H2	15.1	15.2	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
849-H2-80783	11	H2	15.2	15.3	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
850-H2-81311	11	H2	15.3	15.4	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Pelona Schist	No	NI	NI
851-H2-81839	11	H2	15.4	15.5	>30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Mint Canyon Fm	Maximum	High	Low
852-H2-82367	11	H2	15.5	15.6	>30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Mint Canyon Fm	Maximum	High	Low
853-H2-82895	11	H2	15.6	15.7	>30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Mint Canyon Fm.	Maximum	High	Low
854-H2-83423	11	H2	15.7	15.8	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Mint Canyon Fm.	Maximum	High	Low
855-H2-83951	11	H2	15.8	15.9	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Mint Canyon Fm	Maximum	High	Low
856-H2-84479	11	H2	15.9	16.0	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Mint Canyon Fm	Maximum	High	Low
857-H2-85007	11	H2	16.0	16.1	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Mint Canyon Fm	Maximum	High	Low
858-H2-85535	11	H2	16.1	16.2	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Mint Canyon Fm.	Maximum	High	Low
859-H2-86063	11	H2	16.2	16.3	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Mint Canyon Fm	Maximum	High	Low
860-H2-86591	11	H2	16.3	16.4	>30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Mint Canyon Fm	Maximum	High	Low
861-H2-87119	11	H2	16.4	16.5	>30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Mint Canyon Fm	Maximum	High	Low
862-H2-87647	11	H2	16.5	16.6	>30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Mint Canyon Fm.	Maximum	High	Low
863-H2-88175	11	H2	16.6	16.7	>30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Mint Canyon Fm.	Maximum	High	Low
864-H2-88703	11	H2	16.7	16.8	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Mint Canyon Fm	Maximum	High	Low
865-H2-89231	11	H2	16.8	16.9	20-30	None	H	Steel Lattice	0.4	0.4	0.043	0.043	Mint Canyon Fm	Maximum	High	Low
866-H2-89759	11	H2	16.9	17.0	>30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Mint Canyon Fm.	Maximum	High	Low
867-H2-90100	11	H2	17.0	17.1	20-30	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	Castaic Fm.	Maximum	High	Low
1266-I-528	12	I	0.0	0.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1267-I-1056	12	I	0.1	0.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1268-I-1584	12	I	0.2	0.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1269-I-2112	12	I	0.3	0.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1270-I-2640	12	I	0.4	0.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1271-I-3168	12	I	0.5	0.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1272-I-3696	12	I	0.6	0.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1273-I-4224	12	I	0.7	0.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1274-I-4752	12	I	0.8	0.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1275-I-5280	12	I	0.9	1.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1276-I-5808	12	I	1.0	1.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1277-I-6336	12	I	1.1	1.2	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1278-I-6864	12	I	1.2	1.3	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1279-I-7392	12	I	1.3	1.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1280-I-7920	12	I	1.4	1.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1281-I-8448	12	I	1.5	1.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1282-I-8976	12	I	1.6	1.7	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1283-I-9504	12	I	1.7	1.8	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1284-I-10032	12	I	1.8	1.9	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1285-I-10560	12	I	1.9	2.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1286-I-11088	12	I	2.0	2.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1287-I-11616	12	I	2.1	2.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1288-I-12144	12	I	2.2	2.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1289-I-12672	12	I	2.3	2.4	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1290-I-13200	12	I	2.4	2.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1291-I-13728	12	I	2.5	2.6	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1292-I-14256	12	I	2.6	2.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1293-I-14784	12	I	2.7	2.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1294-I-15312	12	I	2.8	2.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1295-I-15840	12	I	2.9	3.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1296-I-16368	12	I	3.0	3.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1297-I-16896	12	I	3.1	3.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1298-I-17424	12	I	3.2	3.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1299-I-17952	12	I	3.3	3.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1300-I-18480	12	I	3.4	3.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1301-I-19008	12	I	3.5	3.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1302-I-19536	12	I	3.6	3.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1303-I-20064	12	I	3.7	3.8	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1304-I-20592	12	I	3.8	3.9	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1305-I-21120	12	I	3.9	4.0	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1306-I-21648	12	I	4.0	4.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1307-I-22176	12	I	4.1	4.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1308-I-22704	12	I	4.2	4.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1309-I-23232	12	I	4.3	4.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1310-I-23760	12	I	4.4	4.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1311-I-24288	12	I	4.5	4.6	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1312-I-24816	12	I	4.6	4.7	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
1453-I-99263	12	I	18.7	18.8	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Granitic Rocks	No	NI	NI
1454-I-99791	12	I	18.8	18.9	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Granitic Rocks	No	NI	NI
1455-I-100319	12	I	18.9	19.0	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
1456-I-100847	12	I	19.0	19.1	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
1457-I-101375	12	I	19.1	19.2	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
1458-I-101903	12	I	19.2	19.3	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
1459-I-102431	12	I	19.3	19.4	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Granitic Rocks	No	NI	NI
1460-I-102959	12	I	19.4	19.5	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1461-I-103487	12	I	19.5	19.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1462-I-104015	12	I	19.6	19.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1463-I-104543	12	I	19.7	19.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1464-I-105071	12	I	19.8	19.9	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1465-I-105599	12	I	19.9	20.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1466-I-106127	12	I	20.0	20.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1467-I-106655	12	I	20.1	20.2	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1468-I-107183	12	I	20.2	20.3	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1469-I-107711	12	I	20.3	20.4	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1470-I-108239	12	I	20.4	20.5	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1471-I-108767	12	I	20.5	20.6	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1472-I-109295	12	I	20.6	20.7	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1473-I-109823	12	I	20.7	20.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1474-I-110351	12	I	20.8	20.9	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1475-I-110879	12	I	20.9	21.0	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1476-I-111407	12	I	21.0	21.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1477-I-111935	12	I	21.1	21.2	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1478-I-112463	12	I	21.2	21.3	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1479-I-112991	12	I	21.3	21.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1480-I-113519	12	I	21.4	21.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1481-I-114047	12	I	21.5	21.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1482-I-114575	12	I	21.6	21.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1483-I-115103	12	I	21.7	21.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1484-I-115631	12	I	21.8	21.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1485-I-116159	12	I	21.9	22.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1486-I-116687	12	I	22.0	22.1	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1487-I-117215	12	I	22.1	22.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1488-I-117743	12	I	22.2	22.3	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1489-I-118271	12	I	22.3	22.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1490-I-118799	12	I	22.4	22.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1491-I-119327	12	I	22.5	22.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1492-I-119855	12	I	22.6	22.7	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1493-I-120383	12	I	22.7	22.8	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1494-I-120911	12	I	22.8	22.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1495-I-121439	12	I	22.9	23.0	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Gneiss	No	NI	NI
1496-I-121967	12	I	23.0	23.1	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Gneiss	No	NI	NI
1497-I-122495	12	I	23.1	23.2	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Gneiss	No	NI	NI
1498-I-123023	12	I	23.2	23.3	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Gneiss	No	NI	NI
1499-I-123550	12	I	23.3	23.4	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Gneiss	No	NI	NI
1500-I-124078	12	I	23.4	23.5	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1501-I-124606	12	I	23.5	23.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1502-I-125134	12	I	23.6	23.7	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1503-I-125662	12	I	23.7	23.8	20-30	None	5	Steel Lattice	0.724	0.724	0.85	1.24	Gneiss	No	NI	NI
1504-I-126190	12	I	23.8	23.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1505-I-126718	12	I	23.9	24.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1506-I-127246	12	I	24.0	24.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1507-I-127774	12	I	24.1	24.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1508-I-128302	12	I	24.2	24.3	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1509-I-128830	12	I	24.3	24.4	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1510-I-129358	12	I	24.4	24.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Tick Canyon Fm.	Maximum	Moderate	Low
1511-I-129886	12	I	24.5	24.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Tick Canyon Fm.	Maximum	Moderate	Low
1512-I-130414	12	I	24.6	24.7	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1513-I-130942	12	I	24.7	24.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1514-I-131470	12	I	24.8	24.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1515-I-131998	12	I	24.9	25.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1516-I-132526	12	I	25.0	25.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1517-I-133054	12	I	25.1	25.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1518-I-133582	12	I	25.2	25.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1519-I-134110	12	I	25.3	25.4	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1520-I-134638	12	I	25.4	25.5	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1521-I-135166	12	I	25.5	25.6	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1522-I-135694	12	I	25.6	25.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
1523-I-136222	12	I	25.7	25.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1524-I-136750	12	I	25.8	25.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1525-I-137278	12	I	25.9	26.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1526-I-137806	12	I	26.0	26.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1527-I-138334	12	I	26.1	26.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1528-I-138862	12	I	26.2	26.3	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1529-I-139390	12	I	26.3	26.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1530-I-139918	12	I	26.4	26.5	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1531-I-140446	12	I	26.5	26.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1532-I-140974	12	I	26.6	26.7	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Mint Canyon Fm.	Maximum	Low	Low
1533-I-141502	12	I	26.7	26.8	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Mint Canyon Fm.	Maximum	Low	Low
1534-I-142030	12	I	26.8	26.9	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Mint Canyon Fm.	Maximum	Low	Low
1535-I-142558	12	I	26.9	27.0	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1536-I-143086	12	I	27.0	27.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1537-I-143614	12	I	27.1	27.2	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1538-I-144142	12	I	27.2	27.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1539-I-144670	12	I	27.3	27.4	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1540-I-145198	12	I	27.4	27.5	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1541-I-145726	12	I	27.5	27.6	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1542-I-146254	12	I	27.6	27.7	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1543-I-146782	12	I	27.7	27.8	0-10	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	Mint Canyon Fm.	Maximum	Moderate	Low
1544-I-147310	12	I	27.8	27.9	0-10	None - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1545-I-147838	12	I	27.9	28.0	0-10	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1546-I-148366	12	I	28.0	28.1	0-10	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1547-I-148894	12	I	28.1	28.2	0-10	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1548-I-149422	12	I	28.2	28.3	0-10	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1549-I-149950	12	I	28.3	28.4	0-10	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1550-I-150478	12	I	28.4	28.5	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1551-I-151006	12	I	28.5	28.6	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Mint Canyon Fm.	Maximum	Low	Low
1552-I-151534	12	I	28.6	28.7	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Older Alluvium	Undetermined	Low	Low
1553-I-152062	12	I	28.7	28.8	20-30	None	5	Steel Lattice	0.724	0.724	0.85	1.24	Mint Canyon Fm.	Maximum	High	Low
1554-I-152590	12	I	28.8	28.9	20-30	None	5	Steel Lattice	0.724	0.724	0.85	1.24	Quaternary Alluvium	Minor	Low	Low
1555-I-153118	12	I	28.9	29.0	20-30	None	5	Steel Lattice	0.724	0.724	0.85	1.24	Mint Canyon Fm.	Maximum	High	Low
1556-I-153646	12	I	29.0	29.1	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1557-I-154174	12	I	29.1	29.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1558-I-154702	12	I	29.2	29.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1559-I-155230	12	I	29.3	29.4	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1560-I-155758	12	I	29.4	29.5	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1561-I-156286	12	I	29.5	29.6	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1562-I-156814	12	I	29.6	29.7	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
1563-I-157342	12	I	29.7	29.8	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
1564-I-157870	12	I	29.8	29.9	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
1565-I-158398	12	I	29.9	30.0	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm	Maximum	Moderate	Low
1566-I-158926	12	I	30.0	30.1	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
1567-I-159454	12	I	30.1	30.2	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
1568-I-159982	12	I	30.2	30.3	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
1569-I-160510	12	I	30.3	30.4	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
1570-I-161038	12	I	30.4	30.5	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
1571-I-161566	12	I	30.5	30.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
1572-I-162094	12	I	30.6	30.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
1573-I-162622	12	I	30.7	30.8	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
1574-I-163150	12	I	30.8	30.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1575-I-163678	12	I	30.9	31.0	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1576-I-164206	12	I	31.0	31.1	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1577-I-164734	12	I	31.1	31.2	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1578-I-165262	12	I	31.2	31.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1579-I-165790	12	I	31.3	31.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1580-I-166318	12	I	31.4	31.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1581-I-166846	12	I	31.5	31.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Mint Canyon Fm.	Maximum	Moderate	Low
1582-I-167374	12	I	31.6	31.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
1583-I-167902	12	I	31.7	31.8	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low
1584-I-168226	12	I	31.8	31.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Castaic Fm.	Maximum	Moderate	Low

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
1313-I-25344	12	I	4.7	4.8	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1314-I-25872	12	I	4.8	4.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1315-I-26400	12	I	4.9	5.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1316-I-26928	12	I	5.0	5.1	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1317-I-27456	12	I	5.1	5.2	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1318-I-27984	12	I	5.2	5.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1319-I-28512	12	I	5.3	5.4	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1320-I-29040	12	I	5.4	5.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1321-I-29568	12	I	5.5	5.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1322-I-30096	12	I	5.6	5.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1323-I-30624	12	I	5.7	5.8	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1324-I-31152	12	I	5.8	5.9	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1325-I-31680	12	I	5.9	6.0	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1326-I-32208	12	I	6.0	6.1	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1327-I-32736	12	I	6.1	6.2	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1328-I-33264	12	I	6.2	6.3	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1329-I-33792	12	I	6.3	6.4	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1330-I-34320	12	I	6.4	6.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1331-I-34848	12	I	6.5	6.6	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Pelona Schist	No	NI	NI
1332-I-35376	12	I	6.6	6.7	>30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Pelona Schist	No	NI	NI
1333-I-35904	12	I	6.7	6.8	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1334-I-36432	12	I	6.8	6.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1335-I-36960	12	I	6.9	7.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1336-I-37488	12	I	7.0	7.1	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1337-I-38016	12	I	7.1	7.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1338-I-38544	12	I	7.2	7.3	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1339-I-39072	12	I	7.3	7.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1340-I-39600	12	I	7.4	7.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1341-I-40128	12	I	7.5	7.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1342-I-40656	12	I	7.6	7.7	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1343-I-41183	12	I	7.7	7.8	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1344-I-41711	12	I	7.8	7.9	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1345-I-42239	12	I	7.9	8.0	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Anaverde Fm	Maximum	Low	Low
1346-I-42767	12	I	8.0	8.1	0-10	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Quaternary Alluvium	Minor	Low	Low
1347-I-43295	12	I	8.1	8.2	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Anaverde Fm	Maximum	Low	Low
1348-I-43823	12	I	8.2	8.3	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Anaverde Fm	Maximum	Low	Low
1349-I-44351	12	I	8.3	8.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1350-I-44879	12	I	8.4	8.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1351-I-45407	12	I	8.5	8.6	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1352-I-45935	12	I	8.6	8.7	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1353-I-46463	12	I	8.7	8.8	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1354-I-46991	12	I	8.8	8.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1355-I-47519	12	I	8.9	9.0	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1356-I-48047	12	I	9.0	9.1	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1357-I-48575	12	I	9.1	9.2	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1358-I-49103	12	I	9.2	9.3	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1359-I-49631	12	I	9.3	9.4	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1360-I-50159	12	I	9.4	9.5	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1361-I-50687	12	I	9.5	9.6	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1362-I-51215	12	I	9.6	9.7	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1363-I-51743	12	I	9.7	9.8	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1364-I-52271	12	I	9.8	9.9	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1365-I-52799	12	I	9.9	10.0	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1366-I-53327	12	I	10.0	10.1	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1367-I-53855	12	I	10.1	10.2	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1368-I-54383	12	I	10.2	10.3	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1369-I-54911	12	I	10.3	10.4	0-10	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1370-I-55439	12	I	10.4	10.5	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1371-I-55967	12	I	10.5	10.6	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1372-I-56495	12	I	10.6	10.7	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1373-I-57023	12	I	10.7	10.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1374-I-57551	12	I	10.8	10.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1375-I-58079	12	I	10.9	11.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1376-I-58607	12	I	11.0	11.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1377-I-59135	12	I	11.1	11.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1378-I-59663	12	I	11.2	11.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1379-I-60191	12	I	11.3	11.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1380-I-60719	12	I	11.4	11.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1381-I-61247	12	I	11.5	11.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1382-I-61775	12	I	11.6	11.7	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI

Appendix A

UID	Sort	Corridor	Mile From	Mile To	Ground Slope	Access	Ground Disturbance	Structure Type	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Paleontological Resource	Paleontological Sensitivity	Paleontological Initial Impact	Paleontological Residual Impacts
1383-I-62303	12	I	11.7	11.8	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1384-I-62831	12	I	11.8	11.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1385-I-63359	12	I	11.9	12.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1386-I-63887	12	I	12.0	12.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1387-I-64415	12	I	12.1	12.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1388-I-64943	12	I	12.2	12.3	20-30	None	5	Steel Lattice	0.724	0.724	0.85	1.24	Pelona Schist	No	NI	NI
1389-I-65471	12	I	12.3	12.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1390-I-65999	12	I	12.4	12.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1391-I-66527	12	I	12.5	12.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1392-I-67055	12	I	12.6	12.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Quaternary Alluvium	Minor	Low	Low
1393-I-67583	12	I	12.7	12.8	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Qls	Minor	Low	Low
1394-I-68111	12	I	12.8	12.9	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1395-I-68639	12	I	12.9	13.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1396-I-69167	12	I	13.0	13.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1397-I-69695	12	I	13.1	13.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1398-I-70223	12	I	13.2	13.3	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1399-I-70751	12	I	13.3	13.4	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1400-I-71279	12	I	13.4	13.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1401-I-71807	12	I	13.5	13.6	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1402-I-72335	12	I	13.6	13.7	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1403-I-72863	12	I	13.7	13.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1404-I-73391	12	I	13.8	13.9	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1405-I-73919	12	I	13.9	14.0	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1406-I-74447	12	I	14.0	14.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1407-I-74975	12	I	14.1	14.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1408-I-75503	12	I	14.2	14.3	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1409-I-76031	12	I	14.3	14.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1410-I-76559	12	I	14.4	14.5	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1411-I-77087	12	I	14.5	14.6	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1412-I-77615	12	I	14.6	14.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1413-I-78143	12	I	14.7	14.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1414-I-78671	12	I	14.8	14.9	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1415-I-79199	12	I	14.9	15.0	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1416-I-79727	12	I	15.0	15.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1417-I-80255	12	I	15.1	15.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1418-I-80783	12	I	15.2	15.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1419-I-81311	12	I	15.3	15.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1420-I-81839	12	I	15.4	15.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1421-I-82367	12	I	15.5	15.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1422-I-82895	12	I	15.6	15.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1423-I-83423	12	I	15.7	15.8	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1424-I-83951	12	I	15.8	15.9	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1425-I-84479	12	I	15.9	16.0	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Older Alluvium	Undetermined	Low	Low
1426-I-85007	12	I	16.0	16.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1427-I-85535	12	I	16.1	16.2	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1428-I-86063	12	I	16.2	16.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1429-I-86591	12	I	16.3	16.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1430-I-87119	12	I	16.4	16.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1431-I-87647	12	I	16.5	16.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1432-I-88175	12	I	16.6	16.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1433-I-88703	12	I	16.7	16.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1434-I-89231	12	I	16.8	16.9	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1435-I-89759	12	I	16.9	17.0	>30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1436-I-90287	12	I	17.0	17.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1437-I-90815	12	I	17.1	17.2	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1438-I-91343	12	I	17.2	17.3	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1439-I-91871	12	I	17.3	17.4	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1440-I-92399	12	I	17.4	17.5	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1441-I-92927	12	I	17.5	17.6	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1442-I-93455	12	I	17.6	17.7	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1443-I-93983	12	I	17.7	17.8	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1444-I-94511	12	I	17.8	17.9	10-20	None	4	Steel Lattice	0.724	0.724	0.56	0.85	Pelona Schist	No	NI	NI
1445-I-95039	12	I	17.9	18.0	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1446-I-95567	12	I	18.0	18.1	20-30	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1447-I-96095	12	I	18.1	18.2	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Pelona Schist	No	NI	NI
1448-I-96623	12	I	18.2	18.3	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1449-I-97151	12	I	18.3	18.4	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Gneiss	No	NI	NI
1450-I-97679	12	I	18.4	18.5	10-20	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	Granitic Rocks	No	NI	NI
1451-I-98207	12	I	18.5	18.6	20-30	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Granitic Rocks	No	NI	NI
1452-I-98735	12	I	18.6	18.7	10-20	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	Granitic Rocks	No	NI	NI

APPENDIX B: DETAILED CONSTRUCTION, OPERATION AND MAINTENANCE PROCESS

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BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

Detailed Construction, Operations and Maintenance Process

POWER ENGINEERS

BRRTP CONSTRUCTION, OPERATION AND MAINTENANCE

1.0 230 KV DOUBLE-CIRCUIT TRANSMISSION LINE

1.1 CONSTRUCTION SEQUENCE

Construction of a transmission line involves the following general sequence of events: surveying the centerline; identifying and constructing access roads; clearing right-of-way and tower sites (including construction yards and batch plants); installing foundations; assembling and erecting the towers; clearing, pulling, tensioning, and splicing sites; installing ground wires and conductors; installing counterpoise; switching station tie in; and cleanup and site reclamation. Various phases of construction would occur at different locations throughout the construction process for the Barren Ridge Renewable Transmission Project (BRRTP). This would require several contractors operating at the same time and in different locations.

The following section describes the construction components necessary for the assembly and installation of the proposed double-circuit transmission line. The description of transmission line construction sequencing and estimates for construction sites would also be relevant for the additional transmission line construction activities associated with the installation of the Castaic-Haskell Canyon #4 circuit on existing structures, and the reconductoring of the Barren Ridge – Rinaldi (BR-RIN) transmission line between the Barren Ridge Switching Station and the Rinaldi Substation.

1.1.1 Surveying Activities

The Los Angeles Department of Water and Power (LADWP) must first obtain survey permits for the portion of the Project crossing federal lands managed by the U.S. Department of Agriculture, Forest Service (USFS) and the U.S. Department of the Interior, Bureau of Land Management (BLM), and rights-of-entry for private lands. This would include the issuance of a 50-year term Special Use Permit to LADWP by the USFS and a 30-year term (renewable) Right-of-Way Grant issued by the BLM. For survey on affected private lands, LADWP would need to negotiate rights-of-entry with the local landowners. Once survey permits are obtained, construction survey work would consist of locating the centerline, tower center hubs, ROW boundaries, and tower access roads, some of which would be located outside of the ROW boundaries. Whenever possible, location of the ROW and Project facilities would be laid out to avoid identified sensitive resources. All of these activities would begin approximately one year prior to the start of construction. Cultural resources and necessary additional threatened and endangered species intensive surveys would be conducted once the survey of the centerline and access roads is completed and clearly marked.

Necessary pre-construction geotechnical investigations would include geological field mapping of each tower site, and borings by drill rig for soil sampling and bedrock corings to determine soil densities and bedrock strength. Test locations would include angle points between the Barren Ridge Switching Station and the Angeles National Forest (ANF), and five to ten locations along the selected alignment within the ANF. Seismic analysis of tower sites for slope stability would also be necessary in mountainous areas of the ANF. Existing roads would be used as much as possible, but some new roads could be required.

1.1.2 Preconstruction Weed Removal

LADWP/ANF/BLM shall prepare and implement a comprehensive, adaptive Weed Control Plan on NFS/BLM lands for pre-construction and construction invasive weed abatement. A pre-construction weed inventory shall be conducted by surveying all areas subject to ground-disturbing activity, including, but not limited to, tower pad preparation and construction areas, tower removal sites, pulling and tensioning

sites, assembly yards, and areas subject to grading for new or improved access and spur roads. In areas subject to ground disturbance, weed infestations shall be treated prior to construction according to control methods and practices for invasive weed populations designed in consultation with the USFS/BLM. The Weed Control Plan shall be updated and utilized for eradication and monitoring post construction. Weed control treatments shall include all legally permitted herbicide, manual, and mechanical methods applied with the authorization of the USFS/BLM. The application of herbicides shall be in compliance with all state and federal laws and regulations under the prescription of a Pest Control Advisor (PCA), where concurrence has been provided by the USFS/BLM, and implemented by a Licensed Qualified Applicator. Herbicides shall not be applied during or within 24 hours of a scheduled rain event. Herbicides shall not be used within Riparian Conservation Areas (RCAs) on the ANF without approval of the USFS. In riparian areas, only water-safe herbicides shall be used. Herbicides shall not be applied when wind velocities exceed six miles per hour. Where manual and/or mechanical methods are used, disposal of the plant debris will follow the regulations set by the USFS/BLM. The timing of the weed control treatment shall be determined for each plant species in consultation with the USFS/BLM (on NFS/BLM lands, respectively) with the goal of controlling populations before they start producing seeds.

1.1.3 Construction of Access Roads

The construction, operation, and maintenance of the proposed transmission line would require that heavy vehicles access tower sites along the right-of-way. Where new access roads are required, they would be constructed to support the weight of these vehicles and would typically be 16 feet wide, consisting of a 14-foot driving surface with a side drainage system between one and two feet in width. Permanent roads would be constructed where necessary for operation or maintenance, or where it is required by the landowner or land managing agency. Road standards would be addressed specifically in the Construction, Operation, and Maintenance Plan (COM Plan) and the Plan of Development (POD) during the engineering phase of the Project, and prior to a Notice to Proceed from the USFS and BLM.

Dependent upon final design and mitigation, some temporary access roads may be constructed as part of the Project. These would typically be 16 foot wide roads, but would typically have no improved ditch drainage systems. Most temporary roads would be constructed by crushing vegetation. In some areas, material and topsoil from the temporary roads would be bladed to one or both sides to facilitate rehabilitation. Following construction, bladed material can be re-spread across the disturbed road section. Seeds and roots contained within the re-spread topsoil layer normally provide a natural source for new growth.

Existing paved and unpaved highways and roads would be used where possible. Roads along existing utility corridors would also be used where possible to minimize new access road construction. In locations where existing roads can be used that are located in close proximity to the proposed centerline of the transmission line, only spur roads to the tower sites would be required. New access roads and spur roads would likely be constructed into the right-of-way where existing roads do not exist. Table 1 lists the estimated ground disturbance of access and spur roads based on terrain.

TABLE 1. ACCESS AND SPUR ROAD GROUND DISTURBANCE ESTIMATES

Ground Disturbance Categories	Access Roads		Spur Roads (average width 16 feet)	
	Average Miles of Roads Per Mile of Transmission Line	Average Acres of Disturbance Per Mile of Transmission Line*	Average Miles of Roads Per Mile of Transmission Line	Average Acres of Disturbance Per Mile of Transmission Line
1. Existing roads or agricultural land; no widening anticipated	n/a	n/a	0.3	0.6
2. Existing 8 ft wide roads that require an additional 8 ft of widening	1.0 to 2.5	Permanent 0.9 to 2.4	0.3	0.6
3. Construct new road on flat terrain (0-10%)	1.0 to 2.5	Permanent 1.9 to 4.8	0.3	0.6
4. Construct new road on sloping terrain (10-20%)[1]	2.5 to 4.0	Temporary 7.3 to 11.6 Permanent 4.8 to 7.7	0.5	1.0
5. Construct new road on steep terrain (20-30%)[1, 2]	4.0 to 6.0	Temporary 23.3 to 34.9 Permanent 7.7 to 11.6	0.8	1.6
6. Construct road on very steep terrain (greater than 30%)[1, 2]	6.0 to 8.0	Temporary 69.8 to 93.1 Permanent 11.6 to 15.5	1.0	1.9

[1] After construction of the transmission line, all access roads in Categories 4 through 6 would be restored back to 16 feet wide.
[2] On steep terrain (approximately 25% or higher) with limited access on the Angeles National Forest, the USFS may require Helicopter Mitigation.

Wherever possible, roads would be built at right angles to streams and washes. Culverts or other drainage structures would be installed as necessary across drainages, but the roads would usually follow the natural grade. In addition, road construction would include dust-control and erosion control measures in sensitive areas. All existing roads would be left in a condition equal to or better than their condition prior to the construction of the transmission line without changing their service level. Gates would be installed where required at fenced property lines to restrict general vehicular access from or to the right-of-way. Where identified within the environmental studies for mitigation purposes, access roads may be excluded or limited within specific sensitive areas, such as Riparian Conservation Areas (RCAs) on the Angeles National Forest.

1.1.4 Clearing Right-of-Way

The clearing of some natural vegetation may be required. However, selective clearing would be performed only when necessary to provide for surveying, electrical safety clearances, line reliability, and maintenance. Trimming or removal of mature vegetation, under or near the conductors, would be done to provide adequate electrical clearance as required by the National Electrical Safety Code, the North American Electrical Reliability Corporation, and California Public Utilities Commission General Order 95 standards.

Trees that could fall onto the lines or affect lines during wind-induced line swing would be removed. Normal clearing procedures are to top or remove large trees and not disturb smaller trees. Where there is a direct conflict between trees and clearance standards, the removal of trees would be jointly reviewed and agreed upon between LADWP and the owners or managers of the property. Rights-of-way would not be chemically treated unless necessary to comply with requirements of a permitting agency. On National Forest System (NFS) lands, approved herbicides would be utilized within the Project area on select invasive plant species. Invasive plant surveys and control would continue for the life of the Project.

1.1.5 Tower Site Clearing

After access roads are developed, preparation of individual structure sites would be required to install the structures. At tower locations, work areas of up to 200 feet squared in flat terrain and up to 200 by 250 feet in areas with slopes greater than eight percent may be needed. Within the work areas, at some tower locations, a level cleared area (pad) may be necessary to complete the construction of the towers. However, many tower sites would be considerably smaller depending on the size of the tower, the terrain, resource considerations, and whether helicopter construction was used, among other factors. The work area would be required for the location of tower footings, assembly of the tower, and the necessary crane maneuvers. Vegetation would be mostly crushed, and cleared only when necessary. All pads not needed for normal transmission line maintenance would be graded to blend as near as possible with the natural contours, and revegetated where required by a permitting agency. See Table 2 for tower specifications and Table 5 for estimated temporary and permanent ground disturbance associated with the double-circuit steel lattice towers.

TABLE 2. DOUBLE-CIRCUIT STEEL LATTICE TOWER SPECIFICATIONS

Tower Placement Details	Specifications	
	Categories 1 through 3 Flat (0 – 10% slope)	Categories 4 through 6 Mountainous (10 – 30% slope)
Towers per mile	±5	±5
Average span length	1,100 ft.	1,000 ft.
Average height Ground to lowest attachment	115 ft.	105 ft.
Upper body height	52 ft.	52 ft.
Overall tower height	167 ft.	157 ft.
Typical range of heights of new towers	120 – 195 ft.	110 – 185 ft.

1.1.6 Staging Areas and Batch Plants

It is anticipated that one or two construction yards or staging areas would be required for materials storage, construction equipment, construction vehicles, and temporary construction offices. Staging areas would be approximately five acres in size, and located centrally or near each end of the transmission line route. The staging areas would be located on previously disturbed private land and would be level and surfaced with crushed aggregate base. The LADWP would negotiate with landowners for specific locations of the staging areas.

Concrete for use in constructing foundations would be dispensed from a portable concrete batch plant located at approximately 15 mile intervals. A rubber-tired flatbed truck and tractor would be used to relocate each plant along the right-of-way. Commercial ready-mix concrete would be used when access to tower construction sites is economically feasible.

The construction yards and batch plants would be located on private land and serve as field offices, reporting locations for workers, parking space for vehicles and equipment, sites for material storage, and stations for equipment maintenance. Facilities would be fenced and their gates locked. Security guards would be stationed where needed. See Table 3 for estimated ground disturbance associated with the staging sites and batch plants.

TABLE 3. STAGING SITES AND BATCH PLANT GROUND DISTURBANCE ESTIMATES

Disturbance Description	**Categories 1 through 3 Flat (0 – 10% slope)***	
	Maximum Estimated Disturbance Dimension per site	**Average Disturbance**
Material staging sites (2 sites)	400 x 540 ft. (5 acres)	N/A
Concrete batch plants (3 sites maximum)	2 acres, 30 mile haul distance	0.2 acre per mile
Total Average Disturbance	**0.2 acre per mile**	

*Material staging sites and concrete batch plants would not be built on terrain above 10% slope.

1.1.7 Foundation Installation

Tower foundations for the lattice structures would consist of drilled concrete piers. The foundation process would start with the boring of four holes for each lattice structure or one hole for each TSP. The holes would be bored using truck- or track-mounted excavators with various diameter augers to match diameter and depth requirements of the foundation sizes.

For a typical suspension lattice tower, each hole would typically be four feet in diameter and 25 feet deep, depending on soil conditions. For the larger angle or dead-end structures, foundations could be up to 30 or more feet deep, depending on soil conditions. Each foundation would extend above the ground line between six inches and four feet. In extremely sandy areas, soil stabilization by water or a gelling agent may be used prior to excavation. Refer to Figure 1 and Figure 2 for typical foundation details for double-circuit towers.

Following excavation of the foundation holes, each footing would be constructed by placing formwork, reinforcing steel and a tower stub into the foundation hole, positioning the stub, and encasing it in concrete. Reinforcing steel cages would be assembled at laydown yards and delivered to each structure location by flatbed truck. Spoil material would be spread around the tower site and used for fill where suitable. The foundation excavation and installation would require access to the site by a power auger or drill, a crane, material trucks, and ready-mix trucks. Typical suspension structures would require approximately 25 to 40 cubic yards of concrete and dead-end structures would require approximately 120 cubic yards of concrete.

FIGURE 1. **TYPICAL FOUNDATION DESIGN FOR THE DOUBLE-CIRCUIT STEEL LATTICE TOWERS**

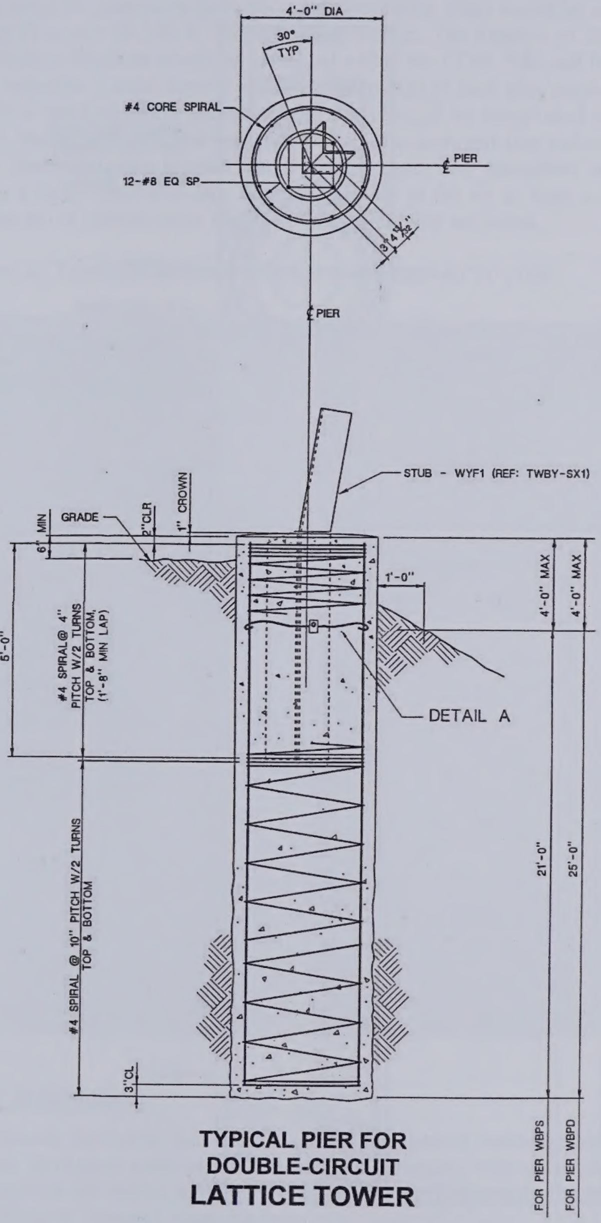
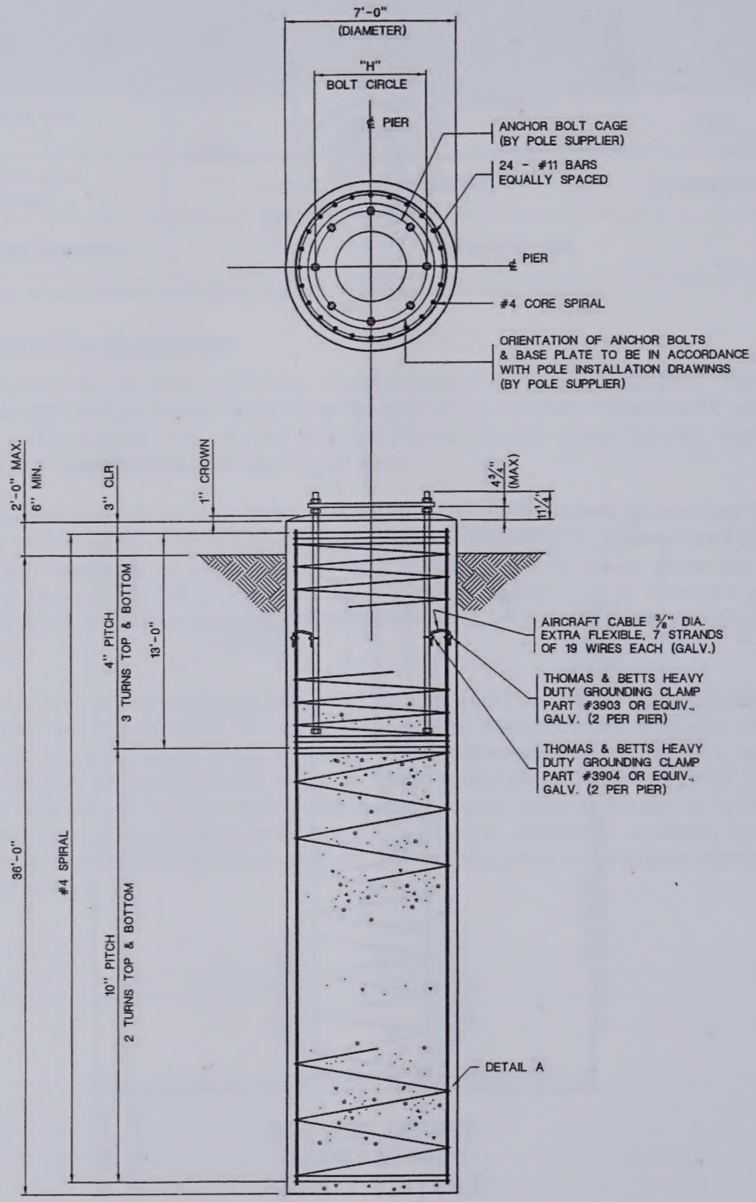

4'-0" DIA
30° TYP
#4 CORE SPIRAL
12-#8 EQ SP
℄ PIER
3 4 11/32"
℄ PIER
STUB - WYF1 (REF: TWBY-SX1)
6" MIN
GRADE
2"CLR
1" CROWN
5'-0"
#4 SPIRAL@ 4" PITCH W/2 TURNS TOP & BOTTOM, (1'-8" MIN LAP)
1'-0"
4'-0" MAX
4'-0" MAX
DETAIL A
#4 SPIRAL @ 10" PITCH W/2 TURNS TOP & BOTTOM
3"CL
21'-0"
25'-0"
TYPICAL PIER FOR DOUBLE-CIRCUIT LATTICE TOWER
FOR PIER WBPS
FOR PIER WBPD

FIGURE 2. **TYPICAL FOUNDATION DESIGN FOR TUBULAR STEEL POLES**

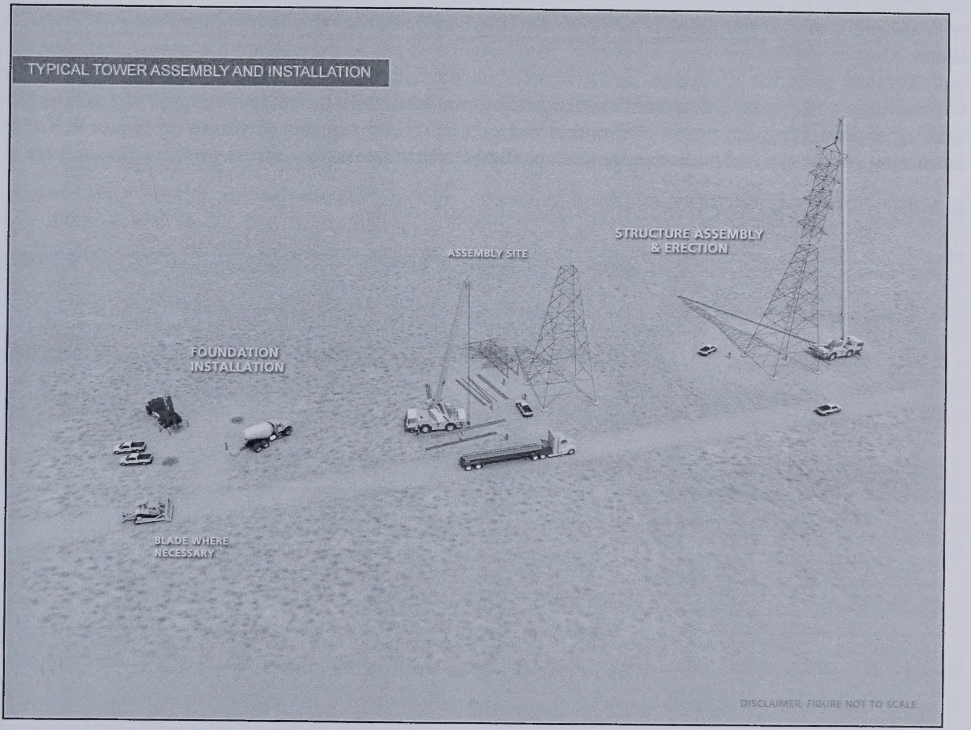

7'-0"
(DIAMETER)
"H"
BOLT CIRCLE
℄ PIER
ANCHOR BOLT CAGE (BY POLE SUPPLIER)
24 - #11 BARS EQUALLY SPACED
℄ PIER
#4 CORE SPIRAL
ORIENTATION OF ANCHOR BOLTS & BASE PLATE TO BE IN ACCORDANCE WITH POLE INSTALLATION DRAWINGS (BY POLE SUPPLIER)
2'-0" MAX.
6" MIN.
3" CLR
1" CROWN
4¾" (MAX)
1¼"
4" PITCH
3 TURNS TOP & BOTTOM
13'-0"
AIRCRAFT CABLE ⅜" DIA. EXTRA FLEXIBLE, 7 STRANDS OF 19 WIRES EACH (GALV.)
THOMAS & BETTS HEAVY DUTY GROUNDING CLAMP PART #3903 OR EQUIV., GALV. (2 PER PIER)
THOMAS & BETTS HEAVY DUTY GROUNDING CLAMP PART #3904 OR EQUIV., GALV. (2 PER PIER)
36'-0"
#4 SPIRAL
10" PITCH
2 TURNS TOP & BOTTOM
DETAIL A

TYPICAL PIER FOR DOUBLE-CIRCUIT POLE

1.1.8 Tower Assembly and Installation

The size of the work areas for structures (assembly and installation sites) would be approximately 40,000 to 50,000 square feet (1 acre = 43,560 ft^2) depending on terrain. The location of these sites has not yet been determined, but exact locations would be identified within the COM Plan and POD prior to a Notice to Proceed from the agencies. Lattice towers would be assembled at each site, installed and bolted to the foundations. Bundles of steel members and associated parts would be transported to each tower site by truck. Steel members would be assembled into subsections of convenient size and weight on the ground. Assembly would be facilitated with a small rough-terrain crane. The assembled subsections would be erected into place by a large crane and then fastened together in the air to form a complete tower. See Figure 3 for an illustration of typical tower assembly and installation activities.

FIGURE 3. TYPICAL TOWER ASSEMBLY AND INSTALLATION ACTIVITIES


TYPICAL TOWER ASSEMBLY AND INSTALLATION
STRUCTURE ASSEMBLY & ERECTION
ASSEMBLY SITE
FOUNDATION INSTALLATION
BLADE WHERE NECESSARY
DISCLAIMER: FIGURE NOT TO SCALE

1.1.9 Conductor Installation

After the towers are erected, insulators, hardware, and stringing sheaves would be delivered to each tower site. The towers would be rigged with insulator strings and stringing sheaves at each ground wire and conductor position. Sheaves are rollers, temporarily attached to the lower end of the insulators that allow the conductor to be pulled, or "strung," along the line.

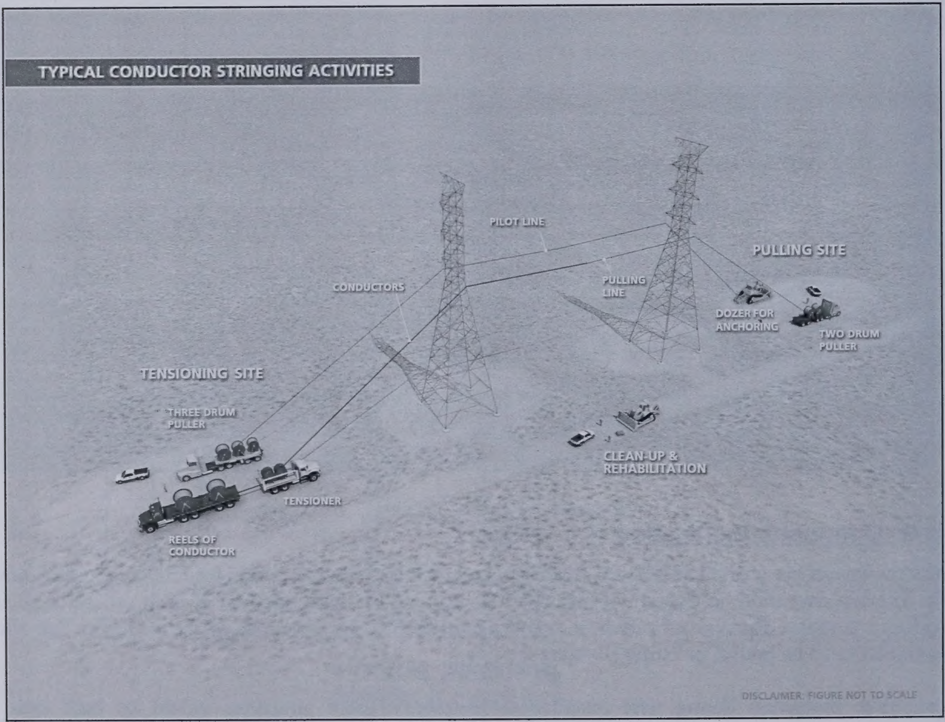
For public protection during wire installation, temporary guard structures would be built next to highways, railroads, power lines, structures, and other major obstacles. Guard structures would consist of

H-frame poles placed on either side of an obstacle. These structures would prevent ground wire, conductor, or equipment from falling on an obstacle. Equipment for installing guard structures would include augers, line trucks, pole trailers, and cranes. A guard structure would be anticipated to be necessary every five miles. The amount of ground disturbance would typically be 200 feet by 300 feet. The guard structures would be left in place until conductors and ground wires were strung, tensioned and clipped; this time frame would be approximately three weeks or longer depending on conditions. Guard structures may not be necessary for small roads. In such cases, other safety measures, such as barriers, flagmen, or other traffic control, would be used.

Pilot lines would be pulled (strung) from tower to tower by a helicopter and threaded through the stringing sheaves at each tower. The pilot line can be used to pull in the ground wire, but is used to pull in a larger-diameter, stronger pulling line for the conductor. The larger-diameter, stronger line—pulling line—would be attached to the conductors to pull them onto towers. This process would be repeated until the ground wire or conductor is pulled through all sheaves. Bundled conductors would be pulled together with the assistance of a running board. The running board attaches the bundled conductor to the pulling line.

Ground wire and conductors would be strung using powered pulling equipment at one end and powered braking or tensioning equipment at the other end of a conductor segment as shown on Figure 4. Sites for tensioning equipment and pulling equipment would be approximately 2.5 miles apart.

FIGURE 4. TYPICAL CONDUCTOR STRINGING ACTIVITIES


TYPICAL CONDUCTOR STRINGING ACTIVITIES
PILOT LINE
PULLING SITE
CONDUCTORS
PULLING LINE
DOZER FOR ANCHORING
TWO DRUM PULLER
TENSIONING SITE
THREE DRUM PULLER
CLEAN-UP & REHABILITATION
TENSIONER
REELS OF CONDUCTOR
DISCLAIMER: FIGURE NOT TO SCALE

To the greatest extent practical, pulling and tensioning sites would be located within the transmission ROW. However, some pulling and tensioning sites may occur outside the ROW. The tensioning and pulling sites could be as large as 200 feet by 500 feet, however they would be limited in size depending on each specific location and what is reasonable for safe construction practices. The size of each site would be limited as much as possible and would be designed in coordination with the responsible property owner or land management agency. Depending on topography, some grading may be required at pulling and tensioning sites to create level pads for equipment. Tensioners, line trucks, wire trailers, and tractors needed for stringing and anchoring the ground wire or conductor would be located at the tensioning sites. A puller, line trucks, sag cat and tractors would be needed for pulling and temporarily anchoring the ground wire and conductor. Table 5 includes ground disturbance estimates for conductor installation (helicopter fly yards, portable helicopter landing pads, pulling and stringing sites, and sleeving and stringing operations).

After installing the conductor ground wire or fiber optic shield wire, sagging, clipping and dead-ending activities, terminating the conductors at dead-end structures, would be performed. This process would involve adjusting the position of the conductors and shield wires, removing stringing sheaves, and permanently attaching the conductor to the insulators with specialized hardware.

1.1.10 Counterpoise Installation and Grounding Practices

Part of standard construction practice prior to wire installation would involve measuring the resistance of tower footings and installation of counterpoise (grounds) as needed. To determine if a tower would require counterpoise, ground resistance measurements would be taken at towers sites after the installation of the foundations and structures. The measurements would be evaluated to determine the numbers and locations of structures requiring counterpoise. If the resistance to remote earth for each transmission tower is greater than 10 ohms, counterpoise (grounds) would be installed to lower the resistance to 10 ohms or less. Counterpoise would consist of a bare copper-clad or galvanized steel cable buried a minimum of 12 inches deep, extending horizontally from one or more tower legs for approximately 200 feet. Typical counterpoise installation would include two installations per structure on opposite tower legs. Four installations per tower could be required in certain circumstances.

In addition to counterpoise installation, standard grounding practices during construction would include both temporary and permanent grounding of equipment and structures, such as fences or pipelines, as necessary to reduce any potential magnetically induced voltages to harmless levels. Such practices could include electrical isolation of equipment or structures and the installation of grounding wires.

1.1.11 Switching Station Tie-in

At the proposed Haskell Canyon Switching Station, the transmission lines would be connected into and out of the switching station through dedicated station structures within the switching station, commonly referred to as "bus."

1.2 UPKEEP OF CONSTRUCTION SITES

Construction sites, material storage yards, and access roads would be kept in an orderly condition throughout the construction period. Refuse and trash would be removed from the sites and disposed of in an approved manner. Oils and fuels would not be dumped along the line. Oils or chemicals would be hauled to a disposal facility authorized to accept such materials. No open burning of construction trash would occur without agency approval.

Microtrash would be cleaned daily from all work areas within known California condor habitat. Microtrash is a term used to describe small bits of debris like bottle caps, rags, screws, bolts, wires, glass, and other materials found in condor habitat.

1.3 HAZARDOUS MATERIALS WITHIN THE PROJECT AREA

Petroleum products such as gasoline, diesel fuel, helicopter fuel, crankcase oil, lubricants, and cleaning solvents would be present within the Project area during construction. These products would be used to fuel, lubricate, and clean vehicles and equipment. These products would be containerized by fuel trucks or by approved containers. When not in use, hazardous materials would be properly stored to prevent drainage or accidents.

Hazardous materials would not be drained onto the ground or into streams or drainage areas. Totally enclosed containment shall be provided for all trash. All construction waste including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials would be removed to a disposal facility authorized to accept such materials.

All construction, operation, and maintenance activities would comply with all applicable federal, state, and local laws and regulations regarding the use of hazardous substances.

The construction or maintenance crew foreman would insure that all applicable laws are obeyed. In addition, an on-site inspector would be present during construction to make sure that all hazardous materials are used and stored properly. A health and safety plan would be developed as part of the COM Plan and POD during the engineering and preconstruction phase of the Project.

1.4 SITE RECLAMATION

The ROW, including temporary construction sites, and any temporary ground disturbance outside of the ROW that may have been caused during or due to the construction of the Project (e.g., temporary access roads, staging sites, assembly yards) would be restored as required by the property owner or land management agency. All practical means would be used to restore the land to its original contour and to restore natural drainage patterns along the ROW. Because revegetation would be difficult in many areas of the Project where precipitation is minimal, it would be important to minimize disturbance during construction. All practical means would be used to increase the chances of vegetation reestablishment in disturbed areas.

The total construction period would be approximately two years. The COM Plan that would be completed during the engineering and preconstruction phase of the Project would address specific site reclamation of all disturbed areas.

1.5 FIRE PROTECTION

A Fire Management Plan would be developed for the Project and all applicable fire laws and regulations would be observed during the construction period. All personnel would be advised of their responsibilities under the applicable fire laws and regulations, including taking practical measures to report and suppress fires.

1.6 CONSTRUCTION MONITORING

An approved compliance program would be developed to address mitigation requirements associated with the avoidance of sensitive plant and animal species, cultural sites, or other sensitive features located

within or adjacent to the Project. Prior to construction, these measures will be described in detail and included in the POD.

1.7 THREE-CIRCUIT TOWER MITIGATION

A temporary transmission line would be constructed to keep the BR-RIN circuit energized during construction of the three-circuit towers. After the temporary line is constructed, the existing BR-RIN single-circuit towers would be removed to allow the new three-circuit towers to be constructed within the existing ROW. Once construction of the three-circuit towers is completed, the temporary transmission line would be removed.

The temporary transmission line would be 7.5 miles long and would consist of wood and steel single poles with an average height of 95 feet, a 3-foot by 3-foot footprint, and an average of eight poles per mile. Construction would occur within a temporary 80- to 100-foot ROW. Refer to Table 4 for specifications and to Table 5 for ground disturbance estimates. The majority of the temporary transmission line would be constructed along San Francisquito Road. Portions would also be constructed along Elizabeth Lake Road and Johnson Road. Pole placement would be adjacent to public roadways wherever possible. If necessary, temporary ROW on private property would be needed where poles could not be placed within public road ROW. The majority of poles would be direct-embedded when set in place and would not require a permanent foundation. Where additional strength is necessary at larger angle points, steel poles would be required, which could require an excavation approximately 6 feet in diameter by 20 feet deep to accommodate the concrete pier foundation that would be cast in place. Once all the poles have been constructed and the conductor installed, the existing BR-RIN circuit would be connected into the temporary line and energized. The construction would require establishment of a staging area, work areas around poles, and pull and tension sites. Access to pole sites and pull and tension sites would be from the adjacent roadways.

Approximately seven miles of the existing BR-RIN single-circuit towers would be removed, with existing ROW utilized to access the existing towers. The new three-circuit towers would be placed within the existing ROW, utilizing existing access roads. Helicopter Mitigation, as described in this section below, would be applied in steeper terrain crossing the Angeles National Forest if additional access is required. If additional access roads, considered to be longer than 300 feet, are necessary, specific locations and construction method (either helicopter or conventional) would be coordinated with the USFS. The new three-circuit tower would require a 25-foot by 30-foot structure footprint and an average of seven structures per mile; the average structure height would be 170 feet, with a maximum tower-to-tower span length of 780 feet. Structures would be installed in the same locations as the existing BR-RIN structures within the limits of standard tower design. The construction process for the new three-circuit towers would be the same as the double-circuit towers discussed above. After completion of construction of the three-circuit towers, the temporary transmission line would be removed and all temporary staging and work area land disturbances would be restored as close to previous conditions as possible and revegetated as required. Restoration practices would be consistent with Section 1.11 Decommissioning of Transmission Lines.

TABLE 4. THREE-CIRCUIT TOWER SPECIFICATIONS

Tower Placement Details	Specifications	
	Triple-Circuit	Temporary Transmission Line
ROW acquisition	None (within existing)	80-100 ft
Structures per Mile	7	8
Average span length	750 ft	650 ft

Tower Placement Details	**Specifications**	
	Triple-Circuit	**Temporary Transmission Line**
Average height (ft) Ground to lowest attachment	120	60
Upper body height	50	45
Overall tower height	170	105
Typical range of heights of new towers	150 - 180 ft.	95 - 105 ft.

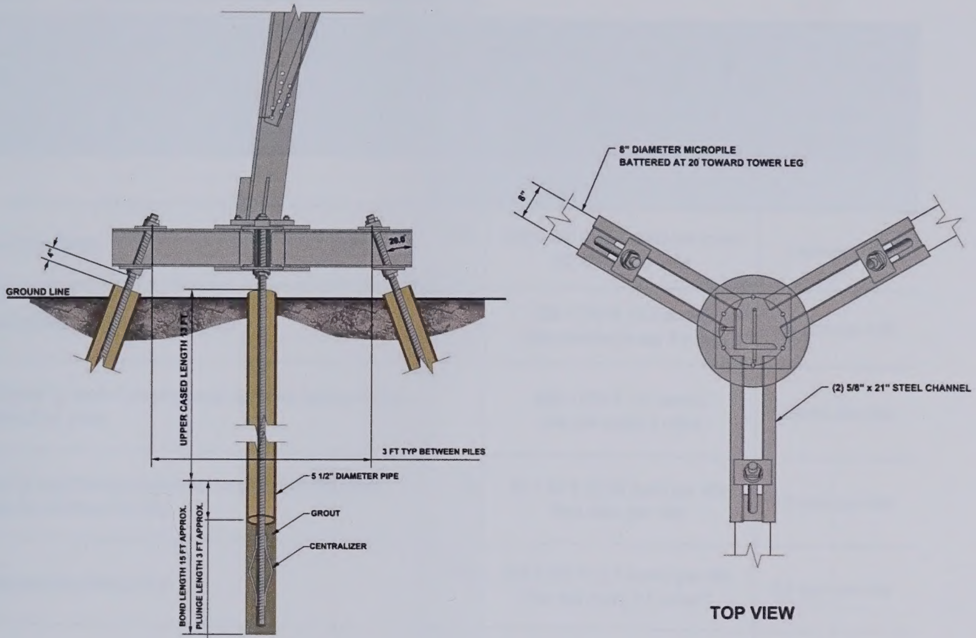
1.8 HELICOPTER MITIGATION

The following sites and ground disturbing construction activities would be required to construct the new transmission line within the identified helicopter construction areas: portable landing pads, helicopter fly yards/staging areas and associated temporary access roads, tower structure vegetation clearing, guard structures at major crossings, and access road pullouts. Refer to Table 5 for ground disturbance estimates for the Helicopter Mitigation.

The transmission line materials (tower steel, conductor reels, structure hardware, etc.) would be delivered by truck to the helicopter fly yards/staging areas. Vegetation clearing may be required at these sites to ensure safe working conditions. The fly yards/staging areas would serve as helicopter support yards for fueling and maintenance, as well as for the transport of materials and personnel. Towers may also be assembled in sections at these yards prior to delivery to the tower sites. Heavy lift helicopters would then fly the towers from the yards to the tower sites.

Portable landing pads would be located at each tower site. These pads would allow helicopters to load and unload personnel, tools, and equipment necessary for construction of foundations and assembly of tower structures. Helicopter-constructed towers that would not be in close proximity to existing access roads would utilize micropile foundations. For each tower leg, micropile foundations would use a group of three to eight 6- to 9-inch diameter casings that would be drilled and grouted into the ground. The exposed portion of the pile group would be encased in a reinforced concrete cap from the top of the casings to a depth anywhere from one to eight feet below the ground surface, depending on the terrain. Figure 5 illustrates the plan view and sections of a micropile foundation.

FIGURE 5. MICROPILE FOUNDATION


4"
20.0°
GROUND LINE
UPPER CASED LENGTH 13 FT
3 FT TYP BETWEEN PILES
5 1/2" DIAMETER PIPE
GROUT
CENTRALIZER
BOND LENGTH 15 FT APPROX.
PLUNGE LENGTH 3 FT APPROX.
8" DIAMETER MICROPILE
BATTERED AT 20 TOWARD TOWER LEG
8"
(2) 5/8" x 21" STEEL CHANNEL

TOP VIEW

LATTICE TOWER LEG
SUPPORT

Conductor installation would proceed as for double-circuit tower installation. The equipment necessary for conductor installation would be large, heavy construction equipment that could only be brought in by truck. Some NFS roads could need maintenance or improvement to allow pulling and tensioning, but no new access or spur roads would be created for conductor installation on the helicopter-constructed towers.

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TABLE 5 GROUND DISTURBANCE ESTIMATES FOR THE PROPOSED 230 KV DOUBLE-CIRCUIT TRANSMISSION LINE

Disturbance Description	Double-Circuit Steel Lattice Towers with Helicopter Stringing of Conductors		Three-Circuit Tower Mitigation (Three-Circuit Steel Lattice Towers with Helicopter Stringing of Conductors)				Helicopter Mitigation (Steel Lattice Towers with Helicopter Installation of Towers and Conductors)	
			Three-Circuit		Temporary Transmission Line			
	Estimated Disturbance Dimension	Average Disturbance	Estimated Disturbance Dimension	Average Disturbance	Estimated Disturbance Dimension	Average Disturbance	Estimated Disturbance Dimension	Average Disturbance
	Temporary Disturbance During Installation							
Tower installation	200 x 200 ft. (0.9 acre) per tower ±5 towers per mile[1]	4.6 acres per mile	200 x 200 ft. (0.9 acre) per tower ±7 towers per mile	6.4 acres per mile	50 X 100 ft. (0.1 acre) per tower ±8 towers per mile	0.9 acre per mile	100 x 100 ft. (0.2 acre) per tower ±5 towers per mile	1 acre per mile
Guard structures at major crossings	200 x 300 ft. (1.4 acres) One crossing every 5 miles	0.3 acre per mile	200 x 300 ft. (1.4 acres) One crossing every 5 miles	0.3 acre per mile	40 X 100 ft. (0.09 acres) One crossing every 5 miles	0.02 acre per mile	200 x 300 ft. (1.3 acres) One crossing every 5 miles	0.3 acre per mile
Helicopter fly yards / staging areas (includes fueling station at one of the sites)	200 x 200 ft(0.9 acre) One site every 5 miles	0.2 acre per mile	200 x 200 ft (0.9 acre) One site every 5 miles	0.2 acre per mile	200 x 200 ft (0.9 acre) One site every 5 miles	0.2 acre per mile	650 x 650 ft. (10 acres) One site every 5 miles	2 acres per mile
Landing area/Portable helicopter landing pads (includes vegetation clearing for site)	50 x 50 ft(0.06 acre) per site One site every 3.5 miles	0.02 acre per mile	50 x 50 ft (0.06 acre) per site One site every 3.5 miles	0.02 acre per mile	50 x 50 ft (0.06 acre) per site One site every 3.5 miles	0.02 acre per mile	50 x 50 ft. (0.06 acre) per site Five sites per mile	0.3 acre per mile
Pulling and tensioning sites	200 x 500 ft (2.3 acres) per site One site every 2.5 miles[2]	0.9 acre per mile	200 x 500 ft (2.3 acres) per site One site every 2.5 miles**	0.9 acre per mile	200 x 500 ft (2.3 acres) per site One site every 2.5 miles**	0.9 acre per mile	200 x 500 ft (2.3 acres) per site One site every 2.5 miles**	0.9 acre per mile
Sleeving and miscellaneous stringing operations	100 x 200 ft. (0.5 acre) per site One site every 2.5 miles	0.2 acre per mile	100 x 200 ft. (0.5 acre) per site One site every 2.5 miles	0.2 acre per mile	50 x 100 ft (0.1 acres) per site One site every 2.5 miles	0.05 acre per mile	100 x 200 ft. (0.5 acre) per site One site every 2.5 miles	0.2 acre per mile
Total Average Temporary Disturbance[3]	**6.2 acres per mile**		**8 acres per mile**		**2.1 acres per mile**		**3.7 acres per mile**	
	Permanent Disturbance							
Tower sites, including vegetation clearance within a 10-foot radius around base of towers in accordance with state law	60 X 60 ft (0.08 acres) ±5 towers per mile	0.2 acre per mile	45 x 50 ft. (0.05 acre) ±7 towers per mile	0.14 acre per mile	N/A	N/A	60 x 60 ft. (0.08 acre) ±5 towers per mile	0.2 acre per mile
Total Average Permanent Disturbance[4]	**0.2 acre per mile**		**0.14 acre per mile**		**N/A**		**0.2 acre per mile**	

Information based on LADWP and POWER Engineers, Inc. estimates. Actual disturbance areas may be smaller based on final engineering design.

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[1] For slopes over 10% (ground disturbance categories 4-6), site dimensions would be 200 x 250 ft. (1.2 acres) and have an average disturbance of 5.8 acres per mile.
[2] For slopes over 10% (ground disturbance categories 4-6), sites would be every 2 miles and have an average disturbance of 1.2 acres per mile.
[3] Access and spur road disturbances included in Table 1.
[4] Ibid.

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1.9 OPERATION OF TRANSMISSION LINES

The nominal voltage for the BRRTP transmission line would be 230 kV AC. There may be minor variations of up to five percent above the nominal level depending upon load flow.

1.9.1 Permitted Uses

After the transmission line has been energized, land uses that are compatible with safety regulations (such as agriculture and grazing) would be permitted in and adjacent to the right-of-way. Incompatible land uses within the right-of-way include construction and maintenance of inhabited dwellings, and any use requiring changes in surface elevation that would affect electrical clearances of existing or planned facilities.

Land uses on public lands that comply with local regulations would be permitted adjacent to or within the ROW, with require approval from the appropriate agency. Permission to use the ROW on private lands would have to be obtained from the utility owning the transmission line.

1.9.2 Safety

Safety is a primary concern in the design of this 230 kV transmission line. The AC transmission line would be protected with power circuit breakers and related line relay protection equipment. If conductor failure occurs, power would be automatically removed from the line. Lightning protection would be provided by overhead ground wires along the line. Electrical equipment and fencing at the switching station would be grounded. All fences, metal gates, pipelines, and other metal components that cross or are within the transmission line ROW would be grounded to prevent electrical shock. If applicable, grounding outside of the ROW may also occur.

1.10 MAINTENANCE OF TRANSMISSION LINES

The 230 kV transmission line would be inspected several times annually by both ground and air patrols. Maintenance would be performed as needed. When access is required for non-emergency maintenance and repairs, LADWP would adhere to the same precautions and procedures that were taken during the original construction.

Emergency maintenance would involve prompt movement of repair crews to repair or replace any damaged equipment or infrastructure. Crews would be instructed to protect crops, plants, wildlife, and other resources of significance. Restoration procedures following completion of repair work would be those prescribed for project implementation construction. The comfort and safety of local residents would be provided for by limiting noise, dust, and the danger caused by maintenance vehicle traffic. Details would be provided in the COM Plan and POD prior to line construction.

1.10.1 Vegetation Management

Vegetation management along the transmission line ROW would be required by the North American Reliability Council (NERC). In compliance with the NERC's Standard FAC-003-l, LADWP would prepare a Vegetation Management Plan for the BRRTP. The Vegetation Management Plan would be included in the COM Plan to be completed prior to the issuance of a Notice to Proceed from the USFS and BLM. Vegetation management would consist of routine tree trimming to maintain the required minimum 10-foot clearance from conductors to vegetation (California Public Resources Code [PRC] 4293); clearance of flammable brush vegetation within a 10-foot radius around the base of transmission line towers in accordance with California PRC 4292; and clearance immediately adjacent to access roads to permit adequate access to the facilities.

1.10.2 Access Road Maintenance

Ongoing access road maintenance would be conducted in accordance with existing or new road authorizations issued to LADWP. Access road maintenance consists of those activities necessary to allow continued access to the ROW and/or each tower structure. These activities may include grading, and maintenance of drainage systems, bridges, culverts, fences, gates and signs. Motor graders, backhoes, dump trucks and pickups are used to maintain access roads.

1.11 DECOMMISSIONING OF TRANSMISSION LINES

At the end of the useful life of the proposed Project, if the facility were no longer required, or if extension of the authorizations were not granted by federal land agencies at the time they expired, the transmission line would be abandoned. Subsequently, conductors, insulators and hardware would be dismantled and removed from the ROW. Tower structures would be removed and foundations broken off below ground surface.

If the line and associated ROW are abandoned at some future date, the ROW would be available for the same uses that existed prior to construction of the Project. Following abandonment and removal of the transmission line from the ROW, any areas disturbed to dismantle the line would be restored and rehabilitated as near as possible to their original condition.

2.0 ADDITION OF NEW 230 KV CIRCUIT

Between the proposed Haskell Canyon Switching Station and the existing Castaic Power Plant, LADWP proposes the addition of 12 miles of a new 230 kV transmission circuit onto existing Castaic – Olive 230 kV Transmission Line structures (towers 1-1 through 12-1). This new circuit would be called Castaic – Haskell Canyon #4 and would utilize the same conductor (2,156 kcmil "Bluebird" ACSS/AW) as that proposed for the new 230 kV transmission line between Barren Ridge and Haskell Canyon Switching Stations.

The addition of a new circuit on existing towers would require many of the same activities of a new transmission line (surveying of ROW, rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, and cleanup). However, all work would be within existing ROW and no new towers would be constructed. Some towers may need to be modified or reinforced to carry the additional weight of the new conductor. Specific towers requiring reinforcement would be determined following detailed design of the Project. Tower reinforcement would not alter the general design or the location of the structures. This process would generally include reinforced foundations or steel member replacements.

3.0 RECONDUCTORING

LADWP proposes the reconductoring of 76 miles of the existing BR-RIN 230 kV transmission line with larger conductors between the Barren Ridge Switching Station and Rinaldi Substation (towers 176-1 through 251-1). The existing conductors (954/ 2,312 kcmil) would be replaced with a new 1,433.6 kcmil "Merrimack" ACSS/TW/HS conductor. The new conductor would have a larger diameter that allows for greater electrical capacity.

The upgrade of the existing BR-RIN would also require many of the same activities of the new transmission line (surveying of ROW, rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, and cleanup). Removal of the existing conductor would be used to string a pulling line, and this line would then be used to pull in the new conductor. All work would remain within the existing 250-foot-wide ROW, with no additional ROW required. Some of the towers would need to be

modified, replaced, and/or have foundations reinforced or replaced to carry the additional weight of the new heavier conductor.

4.0 NEW HASKELL CANYON SWITCHING STATION

As a component of the BRRTP, LADWP proposes the construction of a new switching station in Haskell Canyon, south of the Angeles National Forest on LADWP-owned property at the convergence of several existing and proposed 230 kV transmission lines (the existing BR-RIN, the proposed double-circuit Barren Ridge-Haskell Canyon, existing Castaic-Northridge, Castaic-Sylmar, Castaic-Olive, and the proposed Castaic to Haskell Canyon).

The station would be approximately 500 feet by 600 feet to accommodate the necessary circuit positions, which are made up of equipment, such as steel support structures, circuit breakers, disconnect switches, and associated equipment, and a relay house and control house containing control and protective relaying equipment. The relay and control houses would each be approximately 30 feet long by 12 feet wide by 10 feet high and constructed of gray concrete block. The station yard would include a paved internal access road approximately 16 feet wide and would be enclosed by chain-link fencing with barbed-wire extension for security. Figure 6 illustrates the preliminary design layout for the station. Figure 7 illustrates the preliminary grading plan for the station.

Necessary pre-construction geotechnical investigation on-site would include six borings by a drill rig to investigate bedrock and soil stability and four cone penetration test locations after site grading to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

Construction of the new Haskell Canyon Switching Station would consist of preconstruction surveys, clearing and grading of access roads, site grading and drainage development, installation of concrete foundations and steel support structures, installation of below- and above-ground electrical conduits for equipment power and control, installation of below- and above-grade grounding conductors, and installation of control and relay houses. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks, and flatbed trailers. Cranes, man-lifts, portable welding units, line trucks, and mechanic trucks would also be required. Construction would require an estimated 12 months with approximately 60 workers.

Site preparation work for the station would involve clearing and grading of access roads, clearing of the switchyard site, the cut and fill grading of the site, and placement and compaction of structural fill that would serve as a base for switching station facilities. The site would be graded to maintain current drainage patterns as much as possible. A 16-foot wide paved road and 100-foot by 100-foot gravel parking area would be required. The yard would be covered with crushed-rock aggregate. Native vegetation would be re-established where possible outside the switchyard fence.

Following site grading and development, reinforced concrete foundations would be installed to support the steel structures and electrical equipment and control facilities. It is estimated that 1,500 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 180 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 120-day working period. Subsequent to the foundation installation, trenches would be dug to facilitate placement of copper conductors for the station grounding mat.

Multiple transmission lines would be terminated into the switching station (i.e., the new and existing Barren Ridge – Haskell and Castaic – Haskell Canyon transmission lines) and would need support and

require the installation of galvanized steel structures. An existing 115 kV transmission line may need to be relocated around the proposed station. High-voltage bus work consisting of aluminum jumpers and tubing would be installed within the station.

FIGURE 6. HASKELL CANYON SWITCHING STATION DESIGN LAYOUT

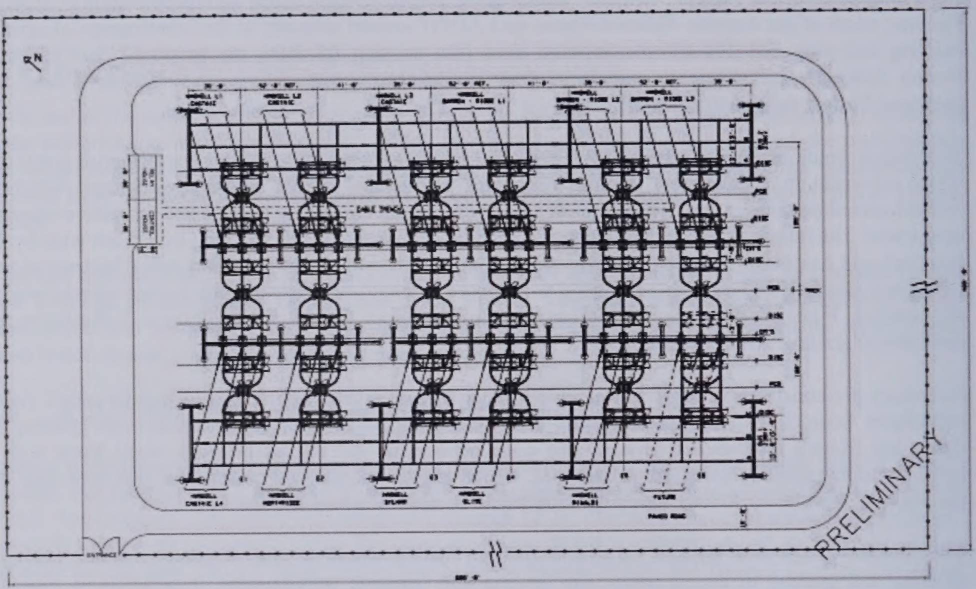
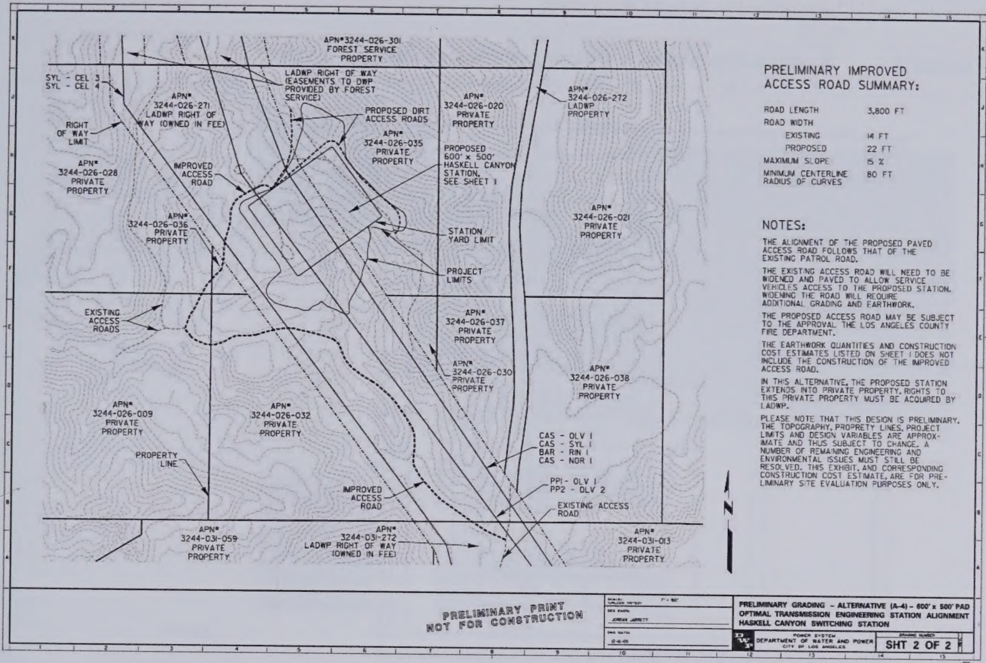


FIGURE 7. HASKELL CANYON GRADING PLAN


APN*3244-026-301
FOREST SERVICE
PROPERTY
LADWP RIGHT OF WAY
(EASEMENTS TO DWP
PROVIDED BY FOREST
SERVICE)
SYL - CEL 3
SYL - CEL 4
APN*
3244-026-271
LADWP RIGHT OF
WAY (OWNED IN FEE)
RIGHT
OF WAY
LIMIT
PROPOSED DIRT
ACCESS ROADS
APN*
3244-026-020
PRIVATE
PROPERTY
APN*
3244-026-272
LADWP
PROPERTY
APN*
3244-026-035
PRIVATE
PROPERTY
APN*
3244-026-028
PRIVATE
PROPERTY
IMPROVED
ACCESS
ROAD
PROPOSED
600' x 500'
HASKELL CANYON
STATION,
SEE SHEET 1
APN*
3244-026-036
PRIVATE
PROPERTY
STATION
YARD LIMIT
APN*
3244-026-021
PRIVATE
PROPERTY
PROJECT
LIMITS
EXISTING
ACCESS
ROADS
APN*
3244-026-037
PRIVATE
PROPERTY
APN*
3244-026-030
PRIVATE
PROPERTY
APN*
3244-026-038
PRIVATE
PROPERTY
APN*
3244-026-009
PRIVATE
PROPERTY
APN*
3244-026-032
PRIVATE
PROPERTY
PROPERTY
LINE
CAS - OLV 1
CAS - SYL 1
BAR - RIN 1
CAS - NOR 1
PP1 - OLV 1
PP2 - OLV 2
IMPROVED
ACCESS
ROAD
EXISTING ACCESS
ROAD
APN*
3244-031-059
PRIVATE
PROPERTY
APN*
3244-031-272
LADWP RIGHT OF WAY
(OWNED IN FEE)
APN*
3244-031-013
PRIVATE
PROPERTY
N
PRELIMINARY PRINT
NOT FOR CONSTRUCTION
JORDAN JARRETT
PRELIMINARY GRADING – ALTERNATIVE (A-4) – 600' x 500' PAD
OPTIMAL TRANSMISSION ENGINEERING STATION ALIGNMENT
HASKELL CANYON SWITCHING STATION
POWER SYSTEM
DEPARTMENT OF WATER AND POWER
CITY OF LOS ANGELES
SHT 2 OF 2

PRELIMINARY IMPROVED ACCESS ROAD SUMMARY:

ROAD LENGTH	3,800 FT
ROAD WIDTH	
EXISTING	14 FT
PROPOSED	22 FT
MAXIMUM SLOPE	15 %
MINIMUM CENTERLINE RADIUS OF CURVES	80 FT

NOTES:

THE ALIGNMENT OF THE PROPOSED PAVED ACCESS ROAD FOLLOWS THAT OF THE EXISTING PATROL ROAD.

THE EXISTING ACCESS ROAD WILL NEED TO BE WIDENED AND PAVED TO ALLOW SERVICE VEHICLES ACCESS TO THE PROPOSED STATION. WIDENING THE ROAD WILL REQUIRE ADDITIONAL GRADING AND EARTHWORK.

THE PROPOSED ACCESS ROAD MAY BE SUBJECT TO THE APPROVAL THE LOS ANGELES COUNTY FIRE DEPARTMENT.

THE EARTHWORK QUANTITIES AND CONSTRUCTION COST ESTIMATES LISTED ON SHEET 1 DOES NOT INCLUDE THE CONSTRUCTION OF THE IMPROVED ACCESS ROAD.

IN THIS ALTERNATIVE, THE PROPOSED STATION EXTENDS INTO PRIVATE PROPERTY. RIGHTS TO THIS PRIVATE PROPERTY MUST BE ACQUIRED BY LADWP.

PLEASE NOTE THAT THIS DESIGN IS PRELIMINARY. THE TOPOGRAPHY, PROPRETY LINES, PROJECT LIMITS AND DESIGN VARIABLES ARE APPROXIMATE AND THUS SUBJECT TO CHANGE. A NUMBER OF REMAINING ENGINEERING AND ENVIRONMENTAL ISSUES MUST STILL BE RESOLVED. THIS EXHIBIT, AND CORRESPONDING CONSTRUCTION COST ESTIMATE, ARE FOR PRELIMINARY SITE EVALUATION PURPOSES ONLY.

5.0 EXPANSION OF BARREN RIDGE SWITCHING STATION

LADWP proposes expansion of the existing Barren Ridge Switching Station to the east side by 235 feet by 500 feet, for a total station size of 485 feet by 500 feet (approximately 5.6 acres). The expansion area of the station would include electrical structures and equipment for the addition of transmission lines, a material staging area, roadway within the station, and drainage area. Figure 8 illustrates the preliminary design layout for the station.

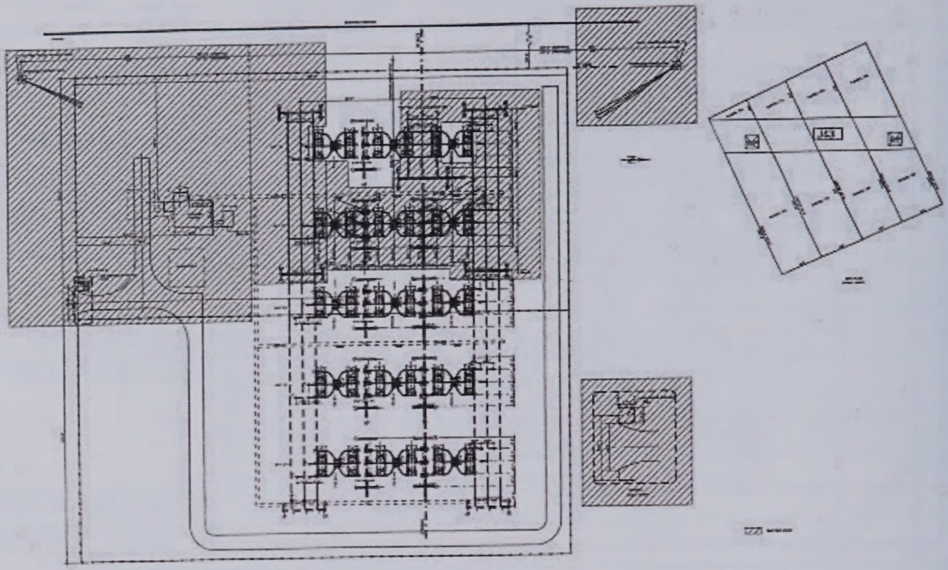
Expansion of the existing switching station would be very similar to the construction of the Haskell Canyon Switching Station as described above. Expansion would consist of preconstruction surveys, site preparation and grading, installation of reinforced concrete foundations, installation of electrical conduits for equipment power and control, and installation of structures and equipment.

Necessary pre-construction geotechnical on-site investigation would include two test pits excavated by a backhoe to investigate soil density and settlement, and four cone penetration test locations on-site to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

It is estimated that 700 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 80 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 90-day working period. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks and flatbed trailers. Cranes, man-lifts, portable welding units, line

trucks, and mechanic trucks would also be required. An estimated 8 months with approximately 60 workers would be required to expand the station.

FIGURE 8. BARREN RIDGE SWITCHING STATION EXPANSION LAYOUT



Water Resources

March 2011

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

Water Resources Technical Report

PROJECT NUMBER:
115244

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POWER ENGINEERS

Water Resources Technical Report

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TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1 Study Personnel 1
1.2 Project Description 1
1.2.1. Construction of New 230 kV Double-Circuit Transmission Line 3
1.2.2. Addition of New 230 kV Circuit 13
1.2.3. Reconductoring of Existing Transmission Line 13
1.2.4. Construction of New Switching Station 14
1.2.5. Expansion of Existing Switching Station 15
1.2.6. Project-Wide Mitigation Measures 15
1.2.7. Construction Work Force and Schedule 15
2.0 REGULATORY FRAMEWORK 17
2.1 Federal 17
2.2 State 17
2.3 Local 19
3.0 PROJECT AREA OVERVIEW 21
4.0 INVENTORY METHODS 22
5.0 AFFECTED ENVIRONMENT 23
5.1 Watersheds 23
5.1.1. Antelope Valley Watershed 23
5.1.2. Santa Clara River Watershed 23
5.1.3. Los Angeles River Watershed 23
5.2 Floodplains 24
5.3 Surface Water 24
5.4 Lakes and Reservoirs 28
5.5 Hydric Soils 30
5.6 Wetlands 30
5.7 Riparian Conservation Areas and Significant Ecological Areas 31
5.8 Groundwater and Wells 32
5.8.1. Fremont Valley Groundwater Basin (Groundwater Basin Number 6-46) 32
5.8.2. Antelope Valley Groundwater Basin (Groundwater Basin Number 6-44) 33
5.8.3. Acton Valley Groundwater Basin (Groundwater Basin Number 4-5) 33
5.8.4. Santa Clara River Valley East Sub-basin (Groundwater Basin Number 4-4.07) 33
5.8.5. San Fernando Valley Groundwater Basin (Groundwater Basin Number 4-12) 34
5.9 Water Quality 38
5.9.1. Surface Water Quality 42
5.9.2. Groundwater Quality 45
6.0 IMPACT ASSESSMENT 47
6.1 Impact Model 47
6.2 Resource Sensitivity 47
6.2.1. Sensitivity Values 47
6.3 Impact Levels 49
6.4 Impact Assessment Methodology 49
6.4.1. 230 kV Transmission Line 49
6.4.2. New 230 kV Circuit 50
6.4.3. Reconductoring 50
6.4.4. New Haskell Canyon Switching Station 50
6.4.5. Expansion of Barren Ridge Switching Station 50
6.5 Impacts and Mitigation Planning 50
6.5.1. Types of Impacts 55

7.0 IMPACT RESULTS 59
7.1 Segment A 59
7.2 Segment B 60
7.3 Segment C 60
7.4 Segment D 62
7.5 Segment E 64
7.6 Segment F 65
7.7 Segments G and 2a 66
7.8 Segment H 69
7.9 Segment I 72
7.10 New 230 kV Circuit (Segment J) 74
7.11 Reconductoring 74
7.12 New Switching Station 75
7.13 Expansion of Existing Barren Ridge Switching Station 76

8.0 ALTERNATIVES 77
8.1 Development of Alternatives 77
8.2 Alternatives Description 77
8.2.1. Action Alternatives 77
8.2.2. No Action Alternative 84
8.3 Impact Results—Routing Alternatives 84
8.3.2. No Action Alternative 86
8.4 Cumulative Impacts 86
8.4.1. Introduction 86
8.4.2. Impact Area 86
8.4.3. Cumulative Projects List – Major Present and Reasonably Foreseeable Future Actions 86
8.4.4. Direct and Indirect Impacts Summary 95
8.4.5. Cumulative Effects Evaluation 96

9.0 REFERENCES 98

10.0 ABBREVIATIONS AND ACRONYMS 99

TABLES

Table 1-1. Anticipated Construction Sequence 16
Table 1-2. Construction Workforce and Schedule 16
Table 5-1. Wells and Groundwater Levels in the Project Area. 35
Table 5-2. Beneficial Uses and Section 303(d) Listing of Surface Water in the BRRTP Study Corridors.40
Table 5-3. Summary of Water Quality Objectives for Surface Waters in the Project Area[1] 42
Table 5-4. Section 303(d) List Water Quality Impaired Waters Requiring TMDLs* in the Project Area..44
Table 5-5. Water Quality in Public Supply Wells 45
Table 6-1. Water Resources Impacts by Access Level Category 48
Table 6-2. General Practices 51
Table 6-3. Specifically Recommended Mitigation Measures. 55
Table 7-1. Mitigation Measures Applicable to Segment A 59
Table 7-2. Mitigation Measures Applicable to Segment B 60
Table 7-3. Mitigation Measures Applicable to Segment C 61
Table 7-4. Mitigation Measures Applicable to Segment D 64
Table 7-5. Mitigation Measures Applicable to Segment E 65
Table 7-6. Mitigation Measures Applicable to Segments F1 and F2 66
Table 7-7. Mitigation Measures Applicable to Segments G and 2a 69
Table 7-8. Mitigation Measures Applicable to Segment H1 and H2 71
Table 7-9. Mitigation Measures Applicable to the 115th Street Modification 72
Table 7-10. Mitigation Measures Applicable to Segment I 73
Table 7-11. Mitigation Measures Applicable to Segment J 74
Table 7-12. Mitigation Measures Applicable to Reconductoring 75
Table 7-13. Mitigation Measures Applicable to New Haskell Canyon Switching Station 75
Table 7-14. Mitigation Measures Applicable to Expansion of Barren Ridge Switching Station 76
Table 8-1. Proposed Generation Projects in the Project Vicinity 91
Table 8-2. BLM Ridgecrest Office Applications for Wind and Solar Energy Generation Projects in the Project Vicinity 92
Table 8-3. Proposed Local Projects in the Project vicinity. 95

FIGURES

Figure 1-1. LADWP's Proposed Action Components 2
Figure 1-2. Types of Towers 3
Figure 1-3. Four-Circuit Towers To be Utilized 5
Figure 1-4. Typical Tower Components 6
Figure 1-5. Preliminary Routing Segments 8
Figure 1-6. Three-Circuit Tower Types 10
Figure 1-7. Three-Circuit Tower Mitigation 11
Figure 5-1. Water Resources Map 26
Figure 8-1. Action Alternatives 78
Figure 8-2. Identified Helicopter Mitigation Locations 80
Figure 8-3. Avenue L Re-route on Alternative 3 83
Figure 8-4. Cumulative Projects 88

APPENDICES

Appendix A: Impact Tables
Appendix B: RUSLE Analysis Report
Appendix C: Detailed Construction, Operation, and Maintenance Process

1.0 INTRODUCTION

The City of Los Angeles Department of Water and Power (LADWP) is proposing the Barren Ridge Renewable Transmission Project (BRRTP or Project) to access clean, renewable resources in the Tehachapi Mountains and Mojave Desert areas, and to improve reliability and upgrade transmission capacity.

LADWP, the US Department of Agriculture, Forest Service (USFS or Forest Service) and the U.S Department of the Interior, Bureau of Land Management (BLM) are preparing a joint Environmental Impact Statement (EIS) / Environmental Impact Report (EIR) for the proposed BRRTP. LADWP is the California Environmental Quality Act (CEQA) Lead Agency, while the USFS and BLM are the federal Co-Lead Agencies under the National Environmental Policy Act (NEPA). An EIS/EIR is an informational disclosure document used to inform agency decision makers and the public of the potential significant environmental effects of a project, identify possible ways to eliminate or minimize the potential significant effects, and describe reasonable alternatives to the Proposed Action /Project.

The purpose of the water resources study is to inventory existing water resources and assess the potential impacts to water resources of each of the proposed transmission line alternative corridors (segments), proposed switching station, and expansion of the existing switching station. The water resource environmental analysis will:

- present the regulatory framework
- provide an overview of the technical methodology used in collecting baseline conditions and evaluating impacts
- examine the affected environment within the study corridors and vicinity, where appropriate
- describe the potential impacts on water resources resulting from construction and operation of the Project
- evaluate the level of potential impacts based upon National Environmental Policy Act (NEPA)/California Environmental Quality Act (CEQA) criteria
- present specifically recommended mitigation measures to minimize potential impacts.

1.1 STUDY PERSONNEL

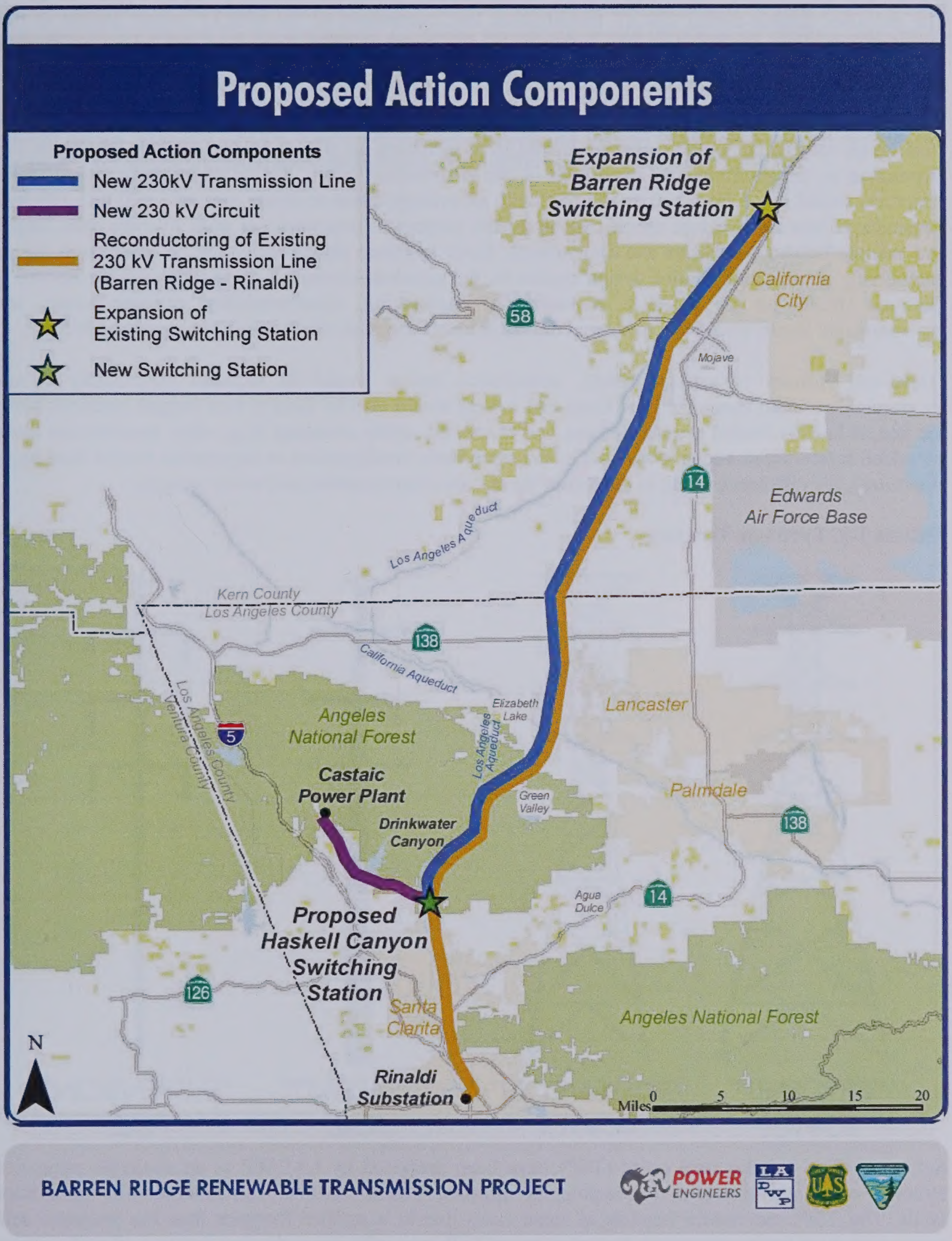
POWER Engineers, Inc. (POWER) personnel who compiled data for background research and prepared the water resources technical report included Allison Carver, a biologist with over 10 years professional experience in biology and water resources, and Kirsten Severud, who provided GIS support for the Project.

1.2 PROJECT DESCRIPTION

The BRRTP would be located in Kern and Los Angeles counties. As proposed by LADWP, it would be approximately 76 miles in length extending from the Barren Ridge Switching Station to Rinaldi Substation, and extending approximately 12 miles from the Castaic Power Plant to the proposed Haskell Canyon Switching Station. As shown in Figure 1-1, the proposed BRRTP would include the following:

1) Construction of approximately 61 miles of a new 230 kilovolt (kV) double-circuit transmission line from the LADWP Barren Ridge Switching Station to Haskell Canyon;
2) Addition of approximately 12 miles of a new 230 kV circuit on the existing double-circuit structures from Haskell Canyon to the Castaic Power Plant;
3) Reconductoring of approximately 76 miles of the existing Barren Ridge-Rinaldi (BR-RIN) 230 kV transmission line with larger capacity conductors between the Barren Ridge Switching Station and the Rinaldi Substation;
4) Construction of a new switching station in Haskell Canyon;
5) Expansion of the existing Barren Ridge Switching Station.

FIGURE 1-1. LADWP'S PROPOSED ACTION COMPONENTS


Proposed Action Components
Proposed Action Components
New 230kV Transmission Line
New 230 kV Circuit
Reconductoring of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
Expansion of Existing Switching Station
New Switching Station
Expansion of Barren Ridge Switching Station
California City
58
Mojave
14
Edwards Air Force Base
Los Angeles Aqueduct
Kern County
Los Angeles County
138
California Aqueduct
Elizabeth Lake
Lancaster
Los Angeles Aqueduct
Ventura County
Los Angeles County
5
Angeles National Forest
Castaic Power Plant
Drinkwater Canyon
Green Valley
Palmdale
138
Agua Dulce
14
Proposed Haskell Canyon Switching Station
126
Santa Clarita
Angeles National Forest
N
Rinaldi Substation
Miles 0 5 10 15 20
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS

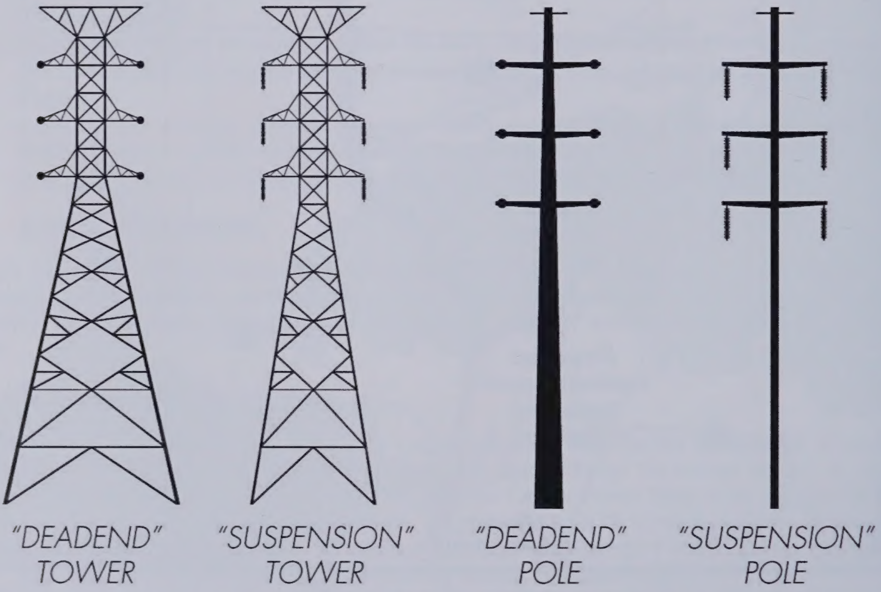
1.2.1. Construction of New 230 kV Double-Circuit Transmission Line

The proposed double-circuit 230 kV transmission line component of the BRRTP would consist of two alternating current (AC) circuits from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station in Haskell Canyon.

The proposed structures for the new transmission line would primarily be self-supporting double-circuit steel lattice towers fabricated from galvanized steel members, as shown on the left side of Figure 1-2. Depending on the environmental conditions of the surrounding terrain, the height of the proposed lattice structures would range from 110 to 195 feet, with an average tower-to-tower span of 1,000 to 1,100 feet. Appendix C lists the structure specifications for the number of structures per mile, average span length, and average heights for towers and components. Exact structure placement would be determined during engineering surveys and detailed design studies for the selected Alternative route following the Record of Decision (ROD) on the EIS/EIR. A variety of engineering, constructability, existing access, and environmental issues would be considered during detailed structure siting within the permitted ROW.

"Dead-end" towers of self-supporting, steel-lattice design would be required periodically to add longitudinal strength along the line. Dead-end towers would also be used at turn (angle) locations along the line, at heavily loaded tower locations, and at specific utility crossings (e.g., other transmission lines) for added safety. Dead-ended towers are of the same basic configuration as suspension towers (non-angle structures), the difference being in the tower "arms," insulator systems, and tower weights.

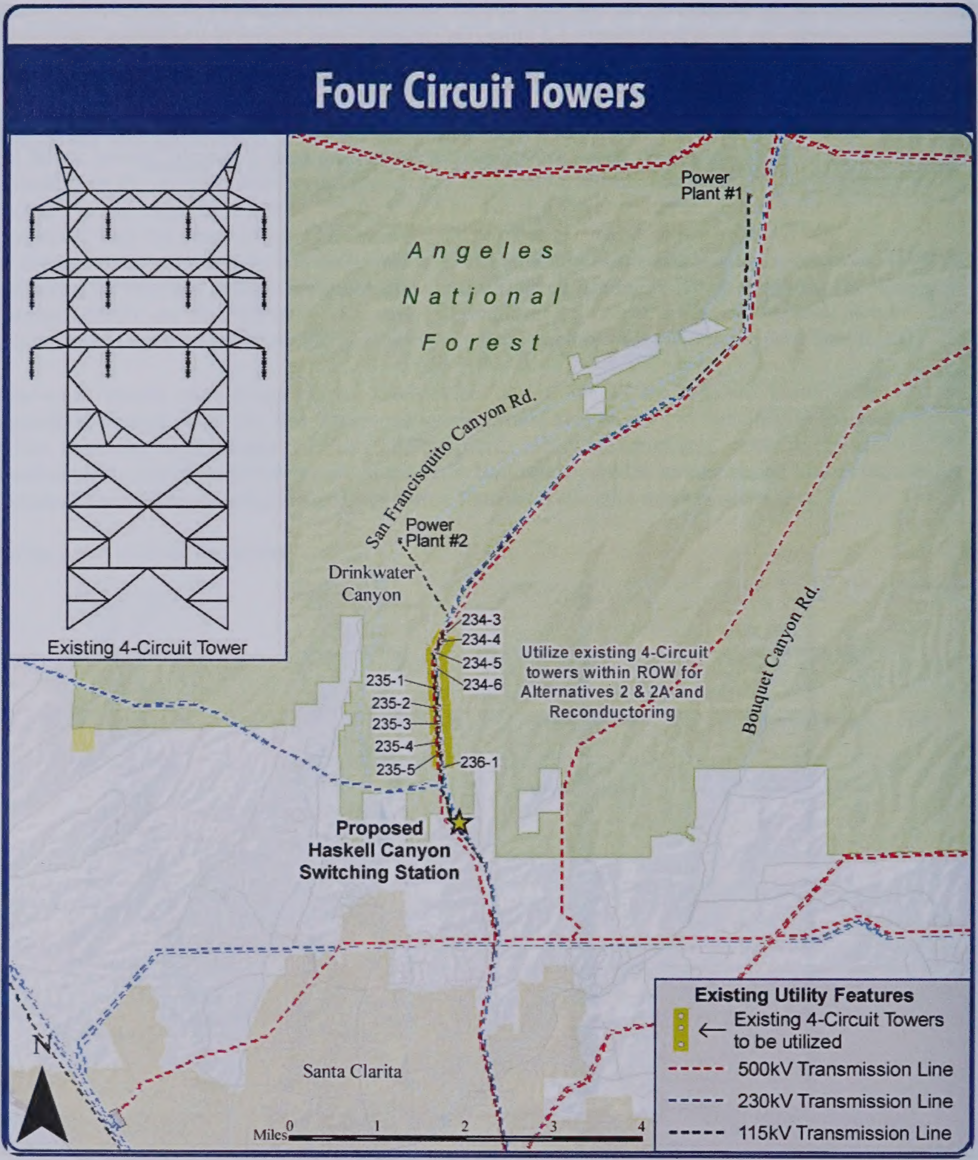
FIGURE 1-2. TYPES OF TOWERS



Self-supporting, tubular steel poles (TSP) have been proposed by LADWP as an available mitigation structure where appropriate to reduce potential impacts, such as conflicts with cultivation on agricultural lands. The TSPs can reduce impacts in some cases due to a smaller footprint than the proposed self-supporting steel lattice structures; however, more TSPs per mile are necessary due to a shorter average span between structures. The TSPs would have an average height range between 95 and 180 feet, depending on the conditions of the surrounding terrain, with an average tower-to-tower span of 700 to 800 feet. Refer to Figure 1-2 for an illustration of the double-circuit poles.

For the majority of the alignment, the two new 230 kV circuits would be placed on new double-circuit transmission towers, but for approximately 1.5 miles, the circuits would be placed on existing four-circuit structures that are located just north of the proposed Haskell Canyon Switching Station. Between where the existing BR-RIN crosses Dry Canyon to the intersection of the Castaic transmission lines, LADWP has existing four-circuit towers with three vacant positions. The existing towers would be utilized in this section for the proposed 230 kV double circuit transmission line instead of constructing new towers. See Figure 1-3 for the location and illustration of the existing four-circuit towers to be utilized.

FIGURE 1-3. FOUR-CIRCUIT TOWERS TO BE UTILIZED

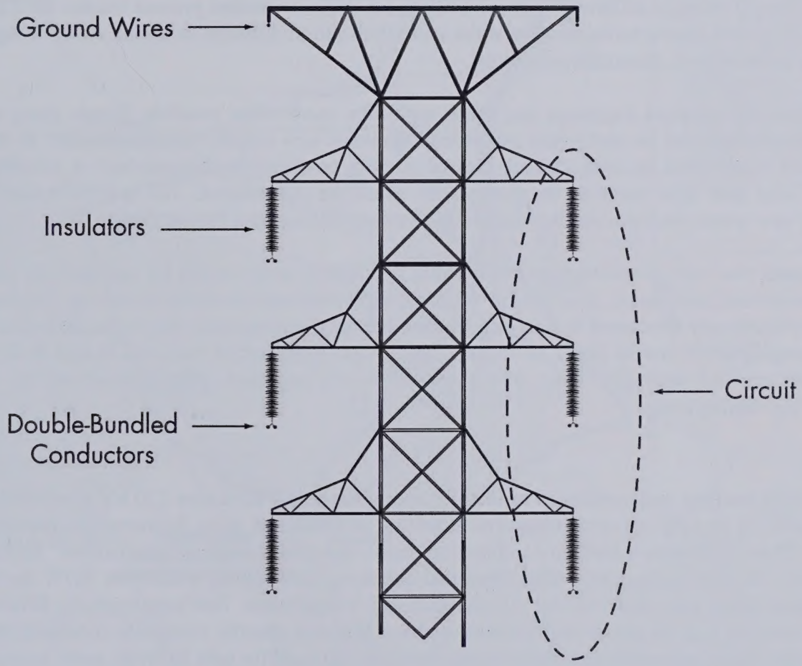

Four Circuit Towers
Existing 4-Circuit Tower
Power Plant #1
Angeles National Forest
San Francisquito Canyon Rd.
Power Plant #2
Drinkwater Canyon
234-3
234-4
234-5
234-6
235-1
235-2
235-3
235-4
235-5
236-1
Utilize existing 4-Circuit towers within ROW for Alternatives 2 & 2A and Reconductoring
Bouquet Canyon Rd.
Proposed Haskell Canyon Switching Station
Santa Clarita
N
Miles 0 1 2 3 4
Existing Utility Features
Existing 4-Circuit Towers to be utilized
500kV Transmission Line
230kV Transmission Line
115kV Transmission Line

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

The self-supporting steel lattice structures and TSPs would utilize concrete foundations. Steel lattice structures would require four footings (one for each leg); TSPs would require single footings. Footings would be steel-reinforced concrete pier type and be cast in place. The typical design for the concrete footings for lattice structures would be between 2.5 and 5.0 feet in diameter, with an average depth of 20 feet depending on soil conditions. Typical design for single foundations for TSPs would include augured holes approximately five to seven feet in diameter and 15 to 30 feet deep, depending on conditions. Formwork steel reinforcing would be assembled in the hole prior to casting concrete in place. Reinforcing steel would become integral to the lower leg of the steel lattice structure during assembly. An above-ground concrete form placed over each hole would result in a final concrete foundation height of 0.5 to 2.0 feet above ground level.

As illustrated in Figure 1-4, Typical Tower Components, each tower carries conductors ("wires"), insulators, and ground wires. The conductor being considered for the new double-circuit 230 kV transmission line and installation of the Castaic – Haskell Canyon #4 circuit on existing structures is a bundled 715.5 kcmil "Starling" ACSS/AW. The reconductoring of the BR-RIN transmission line between Barren Ridge Switching Station and Rinaldi Substation would require a bundled 1,433.6 kcmil "Merrimack" ACSS/TW/HS conductor.

FIGURE 1-4. TYPICAL TOWER COMPONENTS



Each circuit would consist of three phases ("wires") as illustrated in Figure 1-4. To increase the current-carrying capability of the transmission lines and reduce power loss, the Proposed Action (Alternative 2) would utilize bundled conductors installed for each phase. The bundled conductors would consist of two conductor cables connected by a spacer. The new 230 kV double-circuit transmission line would consist of a total of six double-bundled (12 individual) wires.

Minimum conductor height above the ground, under normal operation of the line, is 30 feet. Greater clearances may be required in certain areas to allow for clearances over trees or other vegetation that

could pose a risk to the operation of the transmission line. Minimum conductor clearance would dictate the exact height of each tower based on topography and safety clearance requirements.

Insulators are used to provide the physical connection of conductors to structures. These system components are made of very low conducting materials (polymer insulators) that inhibit the flow of electric current from energized conductors to ground or to other energized system elements. Insulators and their associated hardware are to be configured in an "I" assembly to support conductors while maintaining required distances between phases and grounded structures. Each "I" string would consist of six-inch diameter insulators between six and eight feet long.

To shield conductors from hazard of direct lightning strikes by transferring lightning currents into the ground, overhead ground wires (shield wires) or fiber optic ground wire would be installed on top of new structures.

Construction of a transmission line involves the following general sequence of events: surveying activities; identifying and constructing access roads; clearing ROW and tower sites (including construction yards and batch plants); installing foundations; assembling and installing the towers; clearing, pulling, tensioning, and splicing; installing ground wires and conductors; installing counterpoise; switching station tie-in; and site upkeep and site reclamation. Various phases of construction would occur at different locations throughout the construction process for the BRRTP. This would require several contractors operating at the same time and in different locations. Refer to Appendix C for a description of each construction activity.

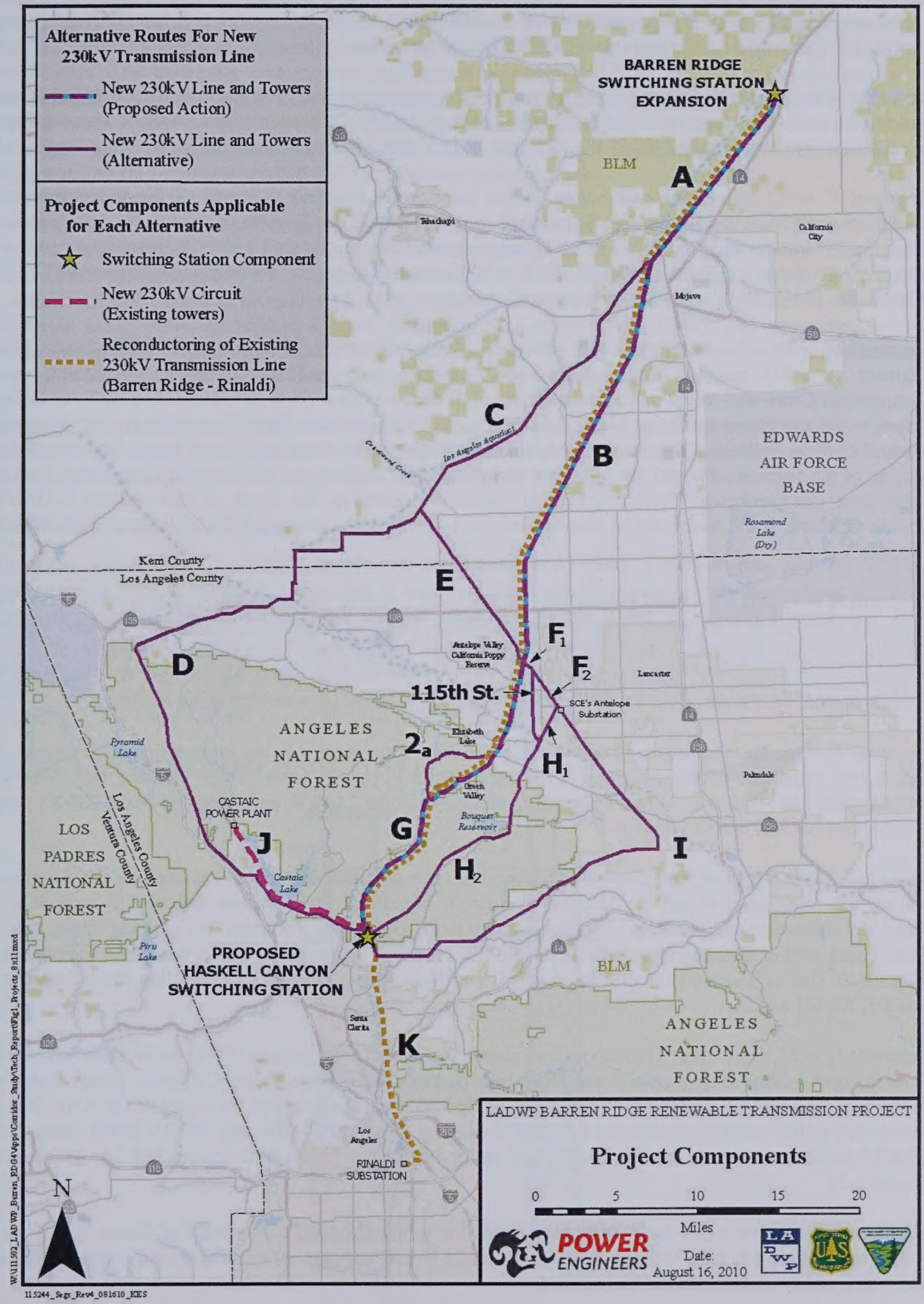
Existing paved and unpaved highways and roads would be used where possible. Roads along existing utility corridors would also be used where possible to minimize new access road construction. In locations where existing roads could be used, that are located in close proximity to the proposed or existing ROW centerlines, only new spur roads to the tower sites would be constructed. The specific locations and design of all new access and spur roads would be determined during final Project design.

It is anticipated that one or two construction yards or staging areas would be required for materials storage, construction equipment, construction vehicles, and temporary construction offices. Staging areas would be approximately five acres in size, and located centrally or near each end of the transmission line route. The staging areas would likely be located on previously disturbed land and would be level and surfaced with crushed aggregate base. The LADWP would negotiate with landowners for specific locations of the staging areas.

Routing

In 2007, a siting analysis was conducted to identify appropriate sites for a new 230 kV transmission line. Over 200 miles of routing opportunities were identified and referred to as Segments A through I (see Figure 1-5). These segments were then combined to create end-to-end routing "alternatives" as discussed in Section 8.2. All routing Segments were identified assuming the need for a 200-foot ROW for the new 230 kV transmission line and the use of conventional transmission line construction. However, as discussed in Section 8.2, the end-to-end alternatives have included specific mitigation measures to reduce certain impacts. These mitigation measures would eliminate the need for new ROW in some locations and would require the use of helicopters for tower assembly in designated areas on the ANF. Also, to the maximum extent possible, all existing access and spur roads would be utilized for the construction, operation, and maintenance of the BRRTP. Below is a brief description of each segment.

FIGURE 1-5. PRELIMINARY ROUTING SEGMENTS


Alternative Routes For New 230kV Transmission Line
New 230kV Line and Towers (Proposed Action)
New 230kV Line and Towers (Alternative)
Project Components Applicable for Each Alternative
Switching Station Component
New 230kV Circuit (Existing towers)
Reconductoring of Existing 230kV Transmission Line (Barren Ridge - Rinaldi)
BARREN RIDGE SWITCHING STATION EXPANSION
BLM
A
Tehachapi
California City
Mojave
C
Los Angeles Aqueduct
B
EDWARDS AIR FORCE BASE
Rosamond Lake (Dry)
Kern County
Los Angeles County
E
F1
F2
Antelope Valley California Poppy Reserve
115th St.
SCE's Antelope Substation
Lancaster
D
ANGELES NATIONAL FOREST
2a
Elizabeth Lake
H1
Palmdale
Pyramid Lake
Green Valley
Bouquet Reservoir
CASTAIC POWER PLANT
G
I
LOS PADRES NATIONAL FOREST
Los Angeles County
Ventura County
J
Castaic Lake
H2
Piru Lake
PROPOSED HASKELL CANYON SWITCHING STATION
BLM
Santa Clarita
K
ANGELES NATIONAL FOREST
Los Angeles
RINALDI SUBSTATION
N
LADWP BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
Project Components
0 5 10 15 20
Miles
POWER ENGINEERS
Date: August 16, 2010
W:\111502_LADWP_Barren_RDG4\Apps\Corridor_Study\Tech_Report\Fig1_Projects_8x11.mxd
115244_Segs_Rev4_081610_KES

Segment A is 13 miles long and runs from LADWP's Barren Ridge Switching Station to the unincorporated community of Mojave, California. It would traverse four miles of BLM managed public lands and parallel LADWP's existing 230 kV Barren Ridge – Rinaldi Transmission Line (BR-RIN) and the 500 kV Pacific Direct Current Intertie (PDCI). It traverses four miles of BLM-managed lands.

Segment B is 27 miles long and starts just north of the unincorporated community of Mojave, California and travels south to a point one mile east of the Antelope Valley California Poppy Reserve. This segment parallels LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines for its entire length.

Segment C is 22 miles long and begins at the location as Segment B, north of the unincorporated community of Mojave, California. Segment C parallels the Los Angeles Aqueduct in a southwest direction to Cottonwood Creek. No existing transmission lines are located within the aqueduct corridor; however, Southern California Edison's (SCE's) Tehachapi Renewable Transmission Project's (TRTP) Alternative 10A is also proposed along the same corridor.

Segment D is 48 miles long and would traverse 16 miles of National Forest System (NFS) lands. This segment generally parallels the Los Angeles Aqueduct in a southwest direction, beginning near Cottonwood Creek and traveling to Lancaster Road. It then travels west to the Interstate 5 freeway utility corridor and continues southeast along LADWP's existing Castaic – Rinaldi corridor to the proposed Haskell Canyon Switching Station. Five high voltage transmission lines are located along the Interstate 5 section of the segment. Oil and gas pipelines are also located in the same I-5 corridor. Continuing further south near Castaic Power Plant, Segment D would be located to the south of two existing LADWP double-circuit 230 kV transmission line towers until reaching the proposed Haskell Canyon Switching Station.

Segment E is 11 miles long and begins near Cottonwood Creek at the intersection of Segments C and D. Segment E travels in a southeast direction and intersects Segment B one mile east of the Antelope Valley California Poppy Reserve. Three existing high voltage transmission lines (Midway-Vincent 500 kV, Antelope-Vincent 230 kV, and Antelope-Mesa 230 kV) are located within the corridor that Segment E would parallel. SCE's proposed TRTP Segment 4 is also proposed adjacent this same corridor.

Segment F is the shortest segment, at four miles in length, and begins at the intersection of Segments B and E one mile east of the Antelope Valley California Poppy Reserve. Three existing high voltage transmission lines (Midway-Vincent 500 kV, Antelope-Vincent 230 kV, and Antelope-Mesa 230 kV) are also located parallel to this segment.

The 115th Street Segment was proposed as a modification to avoid impacts to residents in the Antelope Valley near Segments F and H, described below. It begins mid-way within Segment F near SCE's Antelope Substation and parallels 115th Street south to the California Aqueduct. No existing transmission lines occur within this corridor; however, TRTP's proposed Segment 4 would be located along this alignment. This segment would split Segments F and H as shown in Figure 1-5 creating these Segments into F1, F2, H1 and H2.

Segment G is 21 miles long. Thirteen miles traverse National Forest System (NFS) lands. It travels south from the intersection of Segments B and F one mile east of the Antelope Valley California Poppy Reserve to the proposed Haskell Canyon Switching Station, located near the southern boundary of the ANF. It is a designated utility corridor containing LADWP's existing 230 kV BR-RIN and 500 kV PDCI lines. The BRRTP proposes to use its existing four-circuit structures for two miles, from towers 234-3 to 236-2 (see Figure 1-3).

Segment 2a is seven miles long. It would bypass the unincorporated community of Green Valley and follow an existing fire road through ANF. Segment 2a would not parallel existing transmission facilities, and a new utility corridor would be required.

Segment H is 20 miles long and would parallel SCE's Antelope-Pardee line. It starts near SCE's Antelope Substation at the intersection of Segments F and I and traverses 13 miles of NFS lands to the proposed Haskell Canyon Switching Station. As requested by the USFS, all portions of this segment that fall within the northern and southern borders of the ANF would be constructed entirely by the use of helicopters. The helicopter construction requirement was established by the USFS for consistency of transmission line construction within the existing Antelope-Pardee transmission line corridor. No new access roads would be constructed except those required for pulling and tensioning sites or staging locations for construction materials. The addition of the 115th Street Segment, described above, splits the Segment into H1 (northern portion) and H2 (southern portion).

Segment I is 32 miles long. It begins near the Antelope Substation at the intersection of Segments F and H, and heads southeast through the City of Palmdale, parallel SCE's existing high voltage transmission lines (Midway-Vincent 500 kV, Antelope-Vincent 230 kV, and Antelope-Mesa 230 kV). The segment continues directly south to an existing LADWP transmission line corridor, then continues in a southeast direction to the proposed Haskell Canyon Switching Station, parallel LADWP's existing high voltage transmission lines (Victorville-Rinaldi 500 kV and Adelanto-Rinaldi 230 kV). A majority of this segment would be located outside of NFS lands. Two miles would be located on NFS lands.

Segment J is located parallel to the southern portion of Segment D. Segment J would consist of a new single 230 kV circuit to be placed on existing double-circuit towers between Castaic Power Plant and the proposed Haskell Canyon Switching Station (see discussion in Section 1.2.2 below).

Three-Circuit Tower Mitigation

In areas where there are ROW expansion constraints and where LADWP has existing 230 kV transmission lines, LADWP is proposing to construct three-circuit towers within the existing ROW to carry the existing BR-RIN circuit and the two proposed Barren Ridge to Haskell Canyon (BR-HC) circuits. This would avoid various impacts, including the acquisition of residential property in the unincorporated communities of Willow Springs (milepost 27.1 to 27.6) and Elizabeth Lake and Green Valley (milepost 44.6 to 51.7). Refer to Figure 1-6 for an illustration of three-circuit tower types, and to Figure 1-7, the Three-Circuit Tower Mitigation Map, for proposed locations.

FIGURE 1-6. THREE-CIRCUIT TOWER TYPES

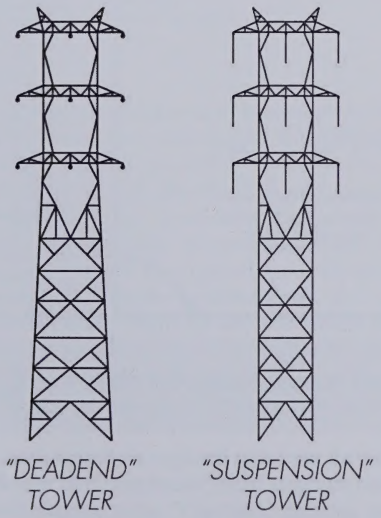
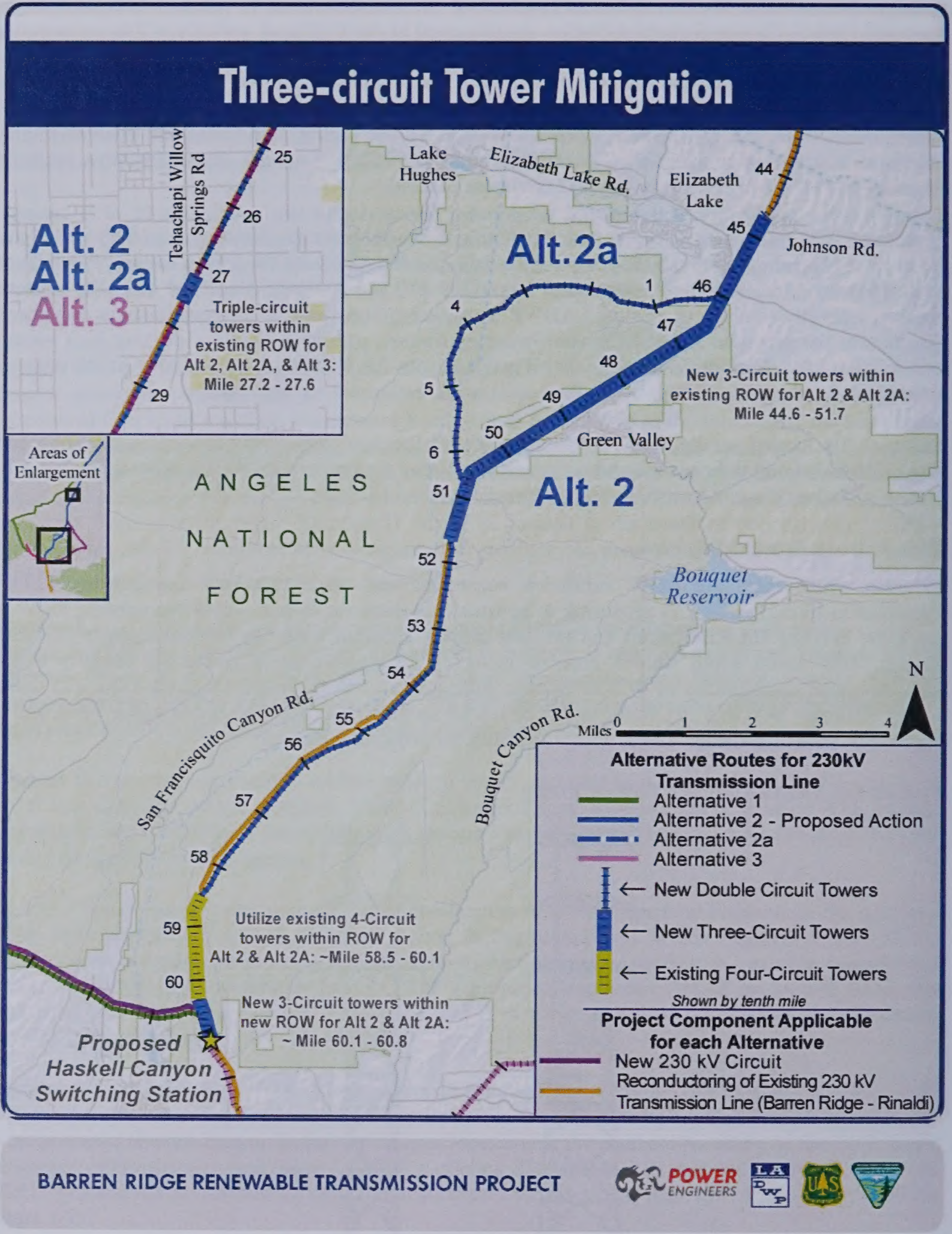


FIGURE 1-7. THREE-CIRCUIT TOWER MITIGATION


Three-circuit Tower Mitigation
Alt. 2
Alt. 2a
Alt. 3
Tehachapi Willow Springs Rd
25
26
27
29
Triple-circuit towers within existing ROW for Alt 2, Alt 2A, & Alt 3: Mile 27.2 - 27.6
Areas of Enlargement
Lake Hughes
Elizabeth Lake Rd.
Elizabeth Lake
Johnson Rd.
Alt.2a
44
45
46
1
4
47
48
49
50
5
6
51
52
53
54
55
56
57
58
59
60
New 3-Circuit towers within existing ROW for Alt 2 & Alt 2A: Mile 44.6 - 51.7
Green Valley
Alt. 2
ANGELES NATIONAL FOREST
Bouquet Reservoir
San Francisquito Canyon Rd.
Bouquet Canyon Rd.
Miles 0 1 2 3 4
N
Utilize existing 4-Circuit towers within ROW for Alt 2 & Alt 2A: ~Mile 58.5 - 60.1
New 3-Circuit towers within new ROW for Alt 2 & Alt 2A: ~ Mile 60.1 - 60.8
Proposed Haskell Canyon Switching Station
Alternative Routes for 230kV Transmission Line
Alternative 1
Alternative 2 - Proposed Action
Alternative 2a
Alternative 3
← New Double Circuit Towers
← New Three-Circuit Towers
← Existing Four-Circuit Towers
Shown by tenth mile
Project Component Applicable for each Alternative
New 230 kV Circuit
Reconductoring of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS
LA DWP

LADWP must maintain the electrical service along the existing BR-RIN transmission line to avoid impacts to the hydroelectric power plants north of the Barren Ridge Switching Station. Therefore, a temporary transmission line would be constructed to keep the BR-RIN circuit energized during construction of the three-circuit towers. After the temporary line is constructed, the existing BR-RIN single-circuit towers would be removed to allow the new three-circuit towers to be constructed within the existing ROW. Once construction of the three-circuit towers is completed, the temporary transmission line would be removed. The temporary transmission line is expected to be in place from six to nine months.

The temporary transmission line would be 7.5 miles long and would consist of wood and steel single poles with an average height of 95 feet, a 3-foot by 3-foot footprint, and an average of eight poles per mile. Construction would occur within a new temporary 80- to 100-foot ROW. The majority of the temporary transmission line would be constructed along San Francisquito Road. Portions would also be constructed along Elizabeth Lake Road and Johnson Road. Pole placement would be adjacent to public roadways wherever possible. If necessary, temporary ROW on private property would be needed where poles could not be placed within public road ROW. The majority of poles would be direct-embedded when set in place and would not require a permanent foundation. Where additional strength is necessary at larger angle points, steel poles would be required, which could require an excavation approximately 6 feet in diameter by 20 feet deep to accommodate the concrete pier foundation that would be cast in place. Once all the poles have been constructed and the conductor installed, the existing BR-RIN circuit would be connected into the temporary line and energized. The construction would require establishment of a staging area, work areas around poles, and pull and tension sites. Access to pole sites and pull and tension sites would be from the adjacent roadways.

Approximately seven miles of the existing BR-RIN single-circuit towers would be removed, with existing ROW utilized to access the existing towers. The new three-circuit towers would be placed within the existing ROW, utilizing existing access roads. Helicopter Mitigation, as described in this section below, would be applied in steeper terrain if additional access is required. The new three-circuit tower would require a 25-foot by 30-foot structure footprint and an average of seven structures per mile; the average structure height would be 170 feet, with a maximum tower-to-tower span length of 780 feet. The construction process for the new three-circuit towers would be the same as the double-circuit towers discussed above. After completion of construction of the three-circuit towers, the temporary transmission line would be removed and all temporary staging and work area land disturbances would be restored as close to previous conditions as possible and revegetated as required.

Helicopter Mitigation

Within the ANF where the terrain is steep and access is limited, the USFS would require that the new double-circuit 230 kV structures be constructed with the use of helicopters (such as the Hughes 500 or Bell 212, or Sikorsky Skycrane). Although no specific locations for this mitigation have been identified for the Proposed Action, as defined, it is expected USFS would require the helicopter mitigation for construction in any area more than 300 feet from an existing road and with slopes greater than approximately 25 percent. The use of helicopters for the construction of transmission tower structures would eliminate the need for new access roads to structure locations, and would therefore minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites. However, the following site and ground disturbing construction activities would be required to construct the new transmission line within the identified helicopter construction areas: portable landing pads, helicopter fly yards/staging areas and associated access roads, tower structure vegetation clearing, guard structures at major crossings, and access road pullouts.

Temporary 24-foot wide access roads would be required to access the helicopter fly yards/staging areas. The transmission line materials (tower steel, conductor reels, structure hardware, etc.) would be delivered by truck to the helicopter fly yards/staging areas. Vegetation clearing may be required at these sites to ensure safe working conditions. The fly yards/staging areas would serve as helicopter support yards for fueling and maintenance, as well as for the transport of materials and personnel. Towers may also be assembled in sections at these yards prior to delivery to the tower sites. Heavy lift helicopters would then fly the towers from the yards to the tower sites.

Portable landing pads would be located at each tower site. These pads would allow helicopters to load and unload personnel, tools, and equipment necessary for construction of foundations and assembly of tower structures. Helicopter-constructed towers that would not be in close proximity to existing access roads would utilize micropile foundations. For each tower leg, micropile foundations would use a group of three to eight 6- to 9-inch diameter casings that would be drilled and grouted into the ground. The exposed portion of the pile group would be encased in a reinforced concrete cap from the top of the casings to a depth anywhere from one to eight feet below the ground surface, depending on the terrain.

Conductor installation would proceed in the same manner as the double-circuit tower installation. The equipment necessary for conductor installation would be large, heavy construction equipment that could only be brought in by truck. Some NFS roads could need maintenance or improvement to allow pulling and tensioning, but no new access or spur roads would be created for conductor installation on the helicopter-constructed towers. After project completion, any maintained access roads to helicopter fly yards/staging areas to would be reduced to 16-feet.

1.2.2. Addition of New 230 kV Circuit

Between the proposed Haskell Canyon Switching Station and the existing Castaic Power Plant, LADWP proposes the addition of 12 miles of a new 230 kV transmission circuit onto existing Castaic – Olive 230 kV Transmission Line structures. The circuit would cross the unincorporated communities of Castaic and Saugus and the city of Santa Clarita. A total of 300 feet of BLM-managed public lands and four miles of NFS lands would be traversed; however, the new circuit would not require a new or additional ROW. This new circuit would be called Castaic – Haskell Canyon #4 and would utilize the same conductor (bundled 715.5 kcmil "Starling" ACSS/AW [aluminum conductor steel supported/aluminum-clad steel wire]) as that proposed for the new 230 kV transmission line between Barren Ridge and Haskell Canyon Switching Stations.

The addition of a new circuit on existing towers would require many of the same construction activities associated with a new transmission line (refer to Appendix C for a description of each construction activity). However, all work would be within existing ROW and no new towers would be constructed. Some towers may need to be modified or reinforced to carry the additional weight of the new conductor. Specific towers requiring reinforcement would be determined following detailed design of the Project. Tower reinforcement would not alter the general design or the location of the structures. This process would generally include reinforced foundations or steel member replacements. Refer to Figure 1-1 for a map showing the location of the new 230 kV circuit.

1.2.3. Reconductoring of Existing Transmission Line

LADWP proposes the reconductoring of 76 miles of the existing BR-RIN 230 kV transmission line with larger conductors from the Barren Ridge Switching Station to Rinaldi Substation. Four miles of BLM-managed public lands, 13 miles of National Forest System (NFS) lands, and 44 miles of private property would be traversed. The existing conductors (954/ 2,312 kcmil) would be replaced with a new 1,433.6 kcmil "Merrimack" ACSS/TW/HS (aluminum conductor steel supported/trapezoidal wires/high strength) conductor. The new conductor would have a larger diameter that allows for greater electrical capacity.

The upgrade of the existing BR-RIN would also require many of the same activities of the new transmission line (surveying of right-of-way [ROW], rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, and cleanup). Removal of the existing conductor would be used to string a pulling line, and this line would then be used to pull in the new conductor. All work would remain within the existing 250-foot-wide ROW, with no additional ROW required. Some of the towers would need to be modified, replaced, and/or have foundations reinforced or replaced to carry the additional weight of the new heavier conductor. Refer to Figure 1-1 for the location of the reconductoring.

1.2.4. Construction of New Switching Station

As a component of the BRRTP, LADWP proposes the construction of a new switching station in Haskell Canyon, south of the Angeles National Forest on LADWP-owned property at the convergence of several existing and proposed 230 kV transmission lines (the existing BR-RIN, the proposed double-circuit Barren Ridge – Haskell Canyon, existing Castaic – Northridge, Castaic – Sylmar, Castaic – Olive, and the proposed Castaic – Haskell Canyon). Refer to Figure 1-1 for the location of the new switching station.

The station would be approximately 500 feet by 600 feet to accommodate the necessary circuit positions, which are made up of equipment, such as steel support structures, circuit breakers, disconnect switches, and associated equipment, and a relay house and control house containing control and protective relaying equipment. The relay and control houses would each be approximately 30 feet long by 12 feet wide by 10 feet high and constructed of gray concrete block. The station yard would include a paved internal access road approximately 16 feet wide and would be enclosed by chain-link fencing with barbed-wire extension for security. The preliminary grading plan for the station is located in Appendix C.

Necessary pre-construction geotechnical investigation on-site would include six borings by a drill rig to investigate bedrock and soil stability and four cone penetration test locations after site grading to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

Construction of the new Haskell Canyon Switching Station would consist of preconstruction surveys, clearing and grading of access roads, site grading and drainage development, installation of concrete foundations and steel support structures, installation of below- and above-ground electrical conduits for equipment power and control, installation of below- and above-grade grounding conductors, and installation of control and relay houses. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks, and flatbed trailers. Cranes, man-lifts, portable welding units, line trucks, and mechanic trucks would also be required. Construction would require an estimated 12 months with approximately 60 workers.

Site preparation work for the station would involve clearing and grading of access roads, clearing of the switchyard site, the cut and fill grading of the site, and placement and compaction of structural fill that would serve as a base for switching station facilities. The site would be graded to maintain current drainage patterns as much as possible. A 16-foot-wide paved road and a 100-foot by 100-foot gravel parking area would be required. The yard would be covered with crushed-rock aggregate. Native vegetation would be re-established where possible outside the switchyard fence.

Following site grading and development, reinforced concrete foundations would be installed to support the steel structures and electrical equipment and control facilities. It is estimated that 1,500 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 180 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 120-day working period. Subsequent to the foundation installation, trenches would be dug to facilitate placement of copper conductors for the station grounding mat.

Multiple transmission lines would be terminated into the switching station (i.e., the new and existing Barren Ridge – Haskell and Castaic – Haskell Canyon transmission lines) and would need support and require the installation of galvanized steel structures. An existing 115 kV transmission line may need to be relocated around the proposed station. High-voltage bus work consisting of aluminum jumpers and tubing would be installed within the station.

1.2.5. Expansion of Existing Switching Station

LADWP proposes expansion of the existing Barren Ridge Switching Station to the east side by 235 feet by 500 feet, for a total station size of 485 feet by 500 feet (approximately 5.6 acres). The expansion area of the station would include electrical structures and equipment for the addition of transmission lines, a material staging area, roadway within the station, and a drainage area. The preliminary design layout for the station may be found in Appendix C. Refer to Figure 1-1 for the location of the existing switching station.

Expansion of the existing switching station would be very similar to the construction of the Haskell Canyon Switching Station as described above. Expansion would consist of preconstruction surveys, site preparation and grading, installation of reinforced concrete foundations, installation of electrical conduits for equipment power and control, and installation of structures and equipment.

Necessary pre-construction geotechnical on-site investigation would include two test pits excavated by a backhoe to investigate soil density and settlement, and four cone penetration test locations on-site to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

It is estimated that 700 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 80 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 90-day working period. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks, and flatbed trailers. Cranes, man-lifts, portable-welding units, line trucks, and mechanic trucks would also be required. An estimated eight months with approximately 60 workers would be required to expand the station.

1.2.6. Project-Wide Mitigation Measures

To address potential impacts of the Proposed Project to multiple resource areas as discussed above, the following project-wide mitigation measure would be applied:

> Three-Circuit Tower Mitigation (THREE-CIRCUIT) – A three-circuit lattice tower design would be implemented as described in Section 1.2.1 of this Technical Report, at the locations shown in Figure 1-7, Three-Circuit Tower Mitigation Map.
>
> Helicopter Mitigation (HELICOPTER) – Helicopter Mitigation shall be implemented, as described in Section 1.2.1 of this Technical Report, in steep areas of the Angeles National Forest where access is limited. For Alternatives 1 and 2a, implementation would occur at the locations shown on Figure 8-2, Identified Helicopter Mitigation Map. During final design of the Project, areas other than those shown on Figure 8-2, including Alternatives 2 and 3, may potentially require helicopter construction of the towers. This determination would generally be made where tower sites have no existing access roads within 300 feet and slopes are greater than 25 percent. Final identification of these tower sites would be determined and agreed upon by USFS, BLM and LADWP.

1.2.7. Construction Work Force and Schedule

The NEPA Record of Decision and CEQA Notice of Determination (anticipated in the early part of 2012) must be made before construction could begin. Therefore, construction of the BRRTP is anticipated to begin no sooner than summer 2012, with a target in-service date of early 2015. These dates are subject to change based on actual completion of design.

The following construction estimates were based on preliminary engineering and the number of workers and construction duration values are estimates; therefore, they are subject to change based on final engineering and design. The new double-circuit 230 kV transmission line from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station would require 12.5 months and 134 workers. The installation of a 230 kV circuit on existing double-circuit towers from the Castaic Power Plant to the proposed Haskell Canyon Switching Station would require a month and a half and 35 workers. The upgrade and reconductoring of the existing BR-RIN would require eight months and 155 workers. The construction of a new 400-foot by 600-foot Haskell Canyon Switching Station would require 12 months and 60 workers. The expansion of the existing Barren Ridge Switching Station would require eight months and 60 workers.

The BRRTP components are anticipated to be constructed in the staggered sequence illustrated below in Tables 1-1 and 1-2. The construction of all Project components would take approximately two years and 447 total workers, with 173 workers at the peak of construction. Table 1-2 summarizes the BRRTP's anticipated construction workforce and schedule based on the most current information available. To allow for any delays in the Project, three weeks of float time were included for the new 230 kV transmission line and reconductoring efforts, and an additional two weeks of float time were included for the stringing of the second circuit between Castaic Power Plant and Haskell Canyon.

TABLE 1-1. ANTICIPATED CONSTRUCTION SEQUENCE

PROJECT COMPONENT	ANTICIPATED CONSTRUCTION SEQUENCE
Expansion of Barren Ridge Switching Station	Weeks 8 – 73
New Haskell Canyon Switching Station	Weeks 1 – 67
New 230 kV Transmission Line	Weeks 42 – 113
Reconductor BR-RIN	Weeks 55 – 88
Addition of 230 kV Circuit	Weeks 51 – 56

TABLE 1-2. CONSTRUCTION WORKFORCE AND SCHEDULE

PROJECT COMPONENT	CONSTRUCTION (START AND END WEEKS)	CONSTRUCTION DURATION (MONTHS)	TOTAL # OF WORKERS	PEAK # OF WORKERS AT ANY GIVEN TIME
Expansion of Barren Ridge Switching Station	8 – 73	15	60	38
New Haskell Canyon Switching Station	1 – 67	15.4	63	38
New 230 kV Transmission Line	42 – 113	16.5	134	131
Reconductor BR-RIN	55 -88	9	155	120
Addition of 230 kV Circuit	51 – 56	1.5	35	35
ALL COMPONENTS	**Weeks 1 – 113**	**26.1 months**	**447 Total Workers**	**173* Peak Workers**

*The value represents the total for the staggered construction of the Project components; it is not reflective of the sum of all the components.

2.0 REGULATORY FRAMEWORK

This Project must comply with various federal, state, and local laws. The following is a list of laws and policies relevant to water resources.

2.1 FEDERAL

Section 404 Clean Water Act. Waters of the U.S. including wetlands are subject to U. S. Army Corps of Engineers (USACE) jurisdiction under Section 404 of the Clean Water Act (CWA). A Section 404 permit is required for the discharge of dredged or fill material into Waters of the U.S. The Los Angeles District of the USACE would provide review and permitting services for this Project.

Section 401 Clean Water Act. Pursuant to Section 401 of the CWA, a water quality certification is required from the California State Water Resources Control Board (SWRCB) for Section 404 permit activities in multiple Regions. The SWRCB certifies that the discharge complies with state water quality standards and ensures that there is no net loss of wetlands through impact avoidance, minimization, and mitigation.

Section 303(d) Clean Water Act. Section 303(d) unites the water quality management strategies of the CWA. Section 303(d) requires that states make a list of waters that exceed the minimum level of pollutants put in place by the CWA. For waters on this list the states must develop total maximum daily loads (TMDLs) which account for all sources of the pollutants that caused the water to be listed. The TMDLs must account for contributions from both point sources and nonpoint sources, as defined by Section 402 of the CWA. In California, the State Water Resources Control Board (SWRCB) has interpreted state law (see Porter-Cologne Water Quality Control Act below) to require that implementation of TMDLs be addressed when incorporated into Basin Plans (water quality control plans).

Angeles National Forest Land Management Plan. The United States Forest Service (USFS) developed a Land Management Plan (USFS 2005) for the Angeles National Forest (Forest), which provides management direction for activities within the Forest. The Plan includes a description of Program Strategies and Tactics geared toward achieving the desired goals of the Plan. Strategies associated with water resources include Watershed Function, Water Management, and Hazardous Materials.

Bureau of Land Management West Mojave Plan. The Bureau of Land Management (BLM, California Desert District, developed a Habitat Conservation Plan and California Desert Conservation Area Plan Amendment for the West Mojave Desert area (BLM 2005). The West Mojave Plan is a habitat conservation plan and federal land use plan amendment that presents a comprehensive strategy to conserve and protect over 100 sensitive plants, animals, and the natural communities of which they are a part, and provides a streamlined program for complying with the California and Federal Endangered Species Acts.

Wild and Scenic Rivers Act. The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 *et seq.*) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. The Act is notable for safeguarding the special character of these rivers, while also recognizing the potential for their appropriate use and development. Designated segments need not include the entire river, and may include tributaries.

2.2 STATE

Porter-Cologne Water Quality Control Act. The Porter-Cologne Water Quality Control Act defines "water quality objectives" as the allowable "limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area." Thus, water quality objectives are intended to protect the public health and welfare, and to maintain or enhance water quality in relation to the existing and/or potential beneficial uses of the water. Water quality objectives apply to both Waters of the United States and Waters of the State.

Basin Plans. The SWRCB requires individual Regional Water Quality Control Boards (RWQCBs) to develop Basin Plans (water quality control plans) designed to preserve and enhance water quality and protect the beneficial uses of all Regional waters. Specifically, Basin Plans designate beneficial uses for surface waters and groundwater, set narrative and numerical objectives that must be attainted or maintained to protect the designated beneficial uses and conform to the States antidegradation policy, and describe implementation programs to protect all waters in the Regions. In addition, Basin Plans incorporate by reference all applicable State and Regional Board plans and policies, and other pertinent water quality policies and regulations. The BRRTP is under the jurisdiction of the Basin Plans of the Los Angeles Regional Water Quality Control Board and the Lahontan Regional Water Quality Control Board.

Construction Storm Water Program. The SWRCB and the nine RWQCBs implement water quality regulations under the federal CWA and California Porter Cologne Water Quality Control Act. Existing water quality regulations require compliance with the National Pollutant Discharge Elimination System (NPDES) for discharges of storm water runoff associated with a construction activity.

Dischargers whose projects disturb one or more acres of soil are required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit, 2009-2009-DWQ). Construction activity subject to this permit includes clearing, grading, and disturbances to the ground such as stockpiling or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility.

The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP should contain a site map(s) which shows the construction site perimeter, existing and proposed buildings, lots, roadways, storm water collection and discharge points, general topography both before and after construction, and drainage patterns across the Project. The SWPPP must list Best Management Practices (BMPs) the discharger will use to protect storm water runoff and the placement of those BMPs. Additionally, the SWPPP must contain a visual monitoring program, a chemical monitoring program for “non-visible” pollutants to be implemented if there is a failure of BMPs, and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment.

If a single project traverses more than one RWQCB jurisdiction, a complete Notice of Intent Package and Notice of Termination must be filed with each jurisdiction. The BRRTP crosses the jurisdictions of the Los Angeles Regional Water Quality Control Board (Region 4) and the Lahontan Regional Water Quality Control Board (Region 6).

Lake or Streambed Alteration Agreement. Section 1602 of the California Department of Fish and Game (CDFG) Code protect the natural flow, bed, channel, and bank of any river, stream, or lake designated by the CDFG, in which there is at any time an existing fish or wildlife resource, or from which these resources derive benefit. General project plans must be submitted to CDFG in sufficient detail to indicate the nature of a project for construction, if the project would:

- Divert, obstruct, or change a streambed
- Use material from the streambeds
- Result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a stream

The Central Region of the CDFG serves Kern County, and the South Coast Region of the CDFG serves Los Angeles County.

2.3 LOCAL

The Los Angeles County Draft General Plan sets forth goals and policy direction for the management of the County's water resources (County of Los Angeles 1980).

Conservation and Open Space Element

Policy Statement: Conserve Water Supply and Protect Water Quality.

> Policy 4: Protect ground water recharge and watershed areas, conserve storm and reclaimed water, and promote water conservation programs.
> Policy 5: Encourage the maintenance, management, and improvement of the quality of imported domestic water, ground water supplies, natural runoff and ocean water.

Policy Statement: Conserve Natural Areas.

> Policy 12: Protect watershed, streams, and riparian vegetation to minimize water pollution, soil erosion and sedimentation, maintain natural habitats, and aid in ground water recharge.

The Kern County General Plan presents policies and goals regarding the growth and resources of unincorporated Kern County (Kern County 2007).

Land Use, Open Space, and Conservation Element

Policies: Physical and Environmental Constraints

> Policy 8: Encourage the preservation of the floodplain's flow conveyance capacity, especially in floodways, to be open space/passive recreation areas throughout the County.
>
> Policy 9: Construction of structures that impede water flow in a primary floodplain will be discouraged.
>
> Policy 10: The County will allow lands which are within flood hazard areas, other than primary floodplains, to be developed in accordance with the General Plan and Floodplain Management Ordinance, if mitigation measures are incorporated so as to ensure that the proposed development will not be hazardous within the requirements of the Safety Element of this General Plan.
>
> Policy 11: Protect and maintain watershed integrity within Kern County.

Implementation Measures: Physical and Environmental Constraints

> Measure H: Development within areas subject to flooding, as defined by the appropriate agency, will require necessary flood evaluations and studies.
>
> Measure I: Designated flood channels and water courses, such as creeks, gullies, and riverbeds, will be preserved as resource management areas or in the case of urban areas, as linear parks whenever practical.
>
> Measure J: Compliance with the Floodplain Management Ordinance prior to grading or improvement of land for development or construction, expansion, conversion, or substantial improvements of a structure is required.

Policies: Resource

> Policy 11: Minimize the alteration of natural drainage areas. Require development plans to include necessary mitigation to stabilize runoff and silt deposition through utilization of grading and flood protection ordinances.
>
> Policy 20: Areas along rivers and streams will be conserved where feasible to enhance drainage, flood control, recreational, and other beneficial uses while acknowledging existing land use patterns.

Implementation Measure: Resource

> Measure E: Designate the riparian community abutting rivers and streams with an appropriate resource use or resource management designation when feasible to do so.

3.0 PROJECT AREA OVERVIEW

The northern half of the BRRTP is located within the Antelope Valley Watershed (Antelope Hydrologic Unit Code 18090206) in Kern and Los Angeles Counties, California. The Antelope Valley Watershed drains 3,387 square miles, mainly from streams originating in the mountains and foothills surrounding the valley. Due to the relatively flat topography of the Antelope Valley, there are few defined natural stream channels within the valley floor; thus, the valley floor is subject to unpredictable sheet flow patterns.

The climate of the Antelope Valley is arid. Due to orographic lifting and precipitation (rain shadow effect), in which mountains to the west and south block most storms and resulting precipitation from passing to the leeward side of the mountain range, most storms in the Antelope Valley are the result of convective storms, which can result in serious flash flooding (Glenn Harris, personal communication). Precipitation extremes are common: variations of 80 percent in annual precipitation can occur. A summer thunderstorm can generate more precipitation on one site than the annual mean for that location (BLM 2005). Annual precipitation in the Antelope Valley ranges from between 15.81 inches in Fairmont to 5.87 inches in the unincorporated community of Mojave, with 23 percent to 41 percent falling as snow (Western Regional Climate Center 2008). High winds can also occur; peak wind velocities of 50 miles per hour are not uncommon, and winds with velocities of 100 miles per hour occur every year (BLM 2005).

The southern half of the study area is within the Santa Clara River Watershed (Santa Clara-Calleguas Hydrologic Unit Code 18070102), and Los Angeles River Watershed (Los Angeles Hydrologic Unit Code 18070105). The Santa Clara River and its watershed drain an area of approximately 1,634 square miles, from the river's headwaters at Pacifico Mountain in the San Gabriel Mountains southwest to its mouth at the Pacific Ocean, just south of the City of Ventura, in Ventura County, California. The Los Angeles River Watershed drains approximately 830 square miles, and the Los Angeles River receives water from tributaries in the San Gabriel Mountains, Santa Monica Mountains, and the Santa Susana Mountains, and groundwater seeps but, south of San Fernando Valley, flows are dominated by urban runoff and flood flows, and effluent from several municipal wastewater treatment plants (Los Angeles RWQCB 1994).

The climate of the southern half of the BRRTP area is Mediterranean, with warm, dry summers and cool, wet winters. Most precipitation occurs between November and March, when storm systems from the north Pacific approach the area from the west or southwest, often producing precipitation simultaneously throughout the area. The orographic effect often results in intense precipitation along and within the San Gabriel Mountains. Annual precipitation in the higher elevations averages 14.32 inches at Elizabeth Lake, with over 95 percent falling as snow. In San Fernando, in the lower elevations, annual precipitation averages 17.66 inches, with less than one percent falling as snow (Western Regional Climate Center 2008).

Both portions of the study area include areas of urban and suburban development. In the last four decades, increased agricultural growth in the northern half of the study area and rapid population growth in the Antelope Valley, Santa Clarita Valley, and San Fernando Valley have resulted in changes in surface water flow and increased water demand.

4.0 INVENTORY METHODS

The goal of the water resource inventory was to identify, map, describe, and document existing water resources within the study corridors of each segment. Detailed data inventories were compiled to facilitate the assessment of potential water resource impacts resulting from construction and operation of the Project.

Initially, base maps of the Project area were prepared at a scale of 1:12,000. Water resource data collected from federal and state databases were reviewed, refined, and updated. Existing maps from the United States Geological Survey (USGS), National Wetland Inventory (NWI), and Federal Emergency Management Agency (FEMA) were collected and included in the inventory, as appropriate. These data were compiled and mapped utilizing a geographic information system (GIS).

The study used National Agriculture Imagery Program (NAIP) 2005 color aerial photography, and national, state, and local agency GIS data layers to identify and more accurately assess surface land uses and land cover types.

A description of water resources was divided by segment. Existing water resources were identified within the segment study corridor in order to present an overview of the water resources near the transmission line alternatives.

5.0 AFFECTED ENVIRONMENT

The water resources study was divided into nine categories to facilitate the inventory and analysis of water resources within the study area:

- watersheds
- floodplains
- surface water
- lakes and reservoirs
- hydric soils
- wetlands
- Riparian Conservation Areas and Significant Ecological Areas
- Groundwater and wells
- water quality

5.1 WATERSHEDS

A watershed is the geographic area draining into a river system, ocean, or other body of water through a single outlet, and includes the receiving waters of that system. Watersheds are usually bordered and separated from other watersheds by mountain ridges or other naturally elevated areas (Los Angeles RWQCB 2007), and contain multiple sub-watersheds. The BRRTP study area traverses three watersheds: Antelope Valley Watershed, Santa Clara River Watershed, and the Los Angeles River Watershed.

5.1.1. Antelope Valley Watershed

(Antelope Hydrologic Unit Number 18090206)

The Antelope Valley Watershed is a large, closed basin in the western Mojave Desert, with a drainage area of 3,387 square miles. Surface water drains into the watershed by way of tributaries in the San Gabriel Mountains, the Tehachapi Mountains, and from precipitation. With no outlet to the ocean, surface water flowing into Antelope Valley either infiltrates into the groundwater basin, flows toward three playas located east of the study area (in Edwards Air Force Base), or is lost through evapotranspiration. Due to the aridness of the climate, more surface water is lost to evapotranspiration than either infiltrates to groundwater storage or discharges to the existing playas in the Antelope Valley (Los Angeles County Sanitation District (LACSD 2004, 2006).

5.1.2. Santa Clara River Watershed

(Santa Clara-Calleguas Hydrologic Unit Code 18070102)

The Santa Clara River Watershed drains approximately 1,634 square miles. The Santa Clara River has its headwaters at Pacifico Mountain in the San Gabriel Mountains, and flows southwest to drain in the Pacific Ocean between the Cities of San Buenaventura and Oxnard, California. The river is divided into two sections: the Upper Santa Clara River, comprised of the main course of the river upstream of the Los Angeles – Ventura County line, and the Lower Santa Clara River. The BRRTP study area is within the Santa Clara Watershed in the vicinity of the Upper Santa Clara River. Major tributaries in the study area include Castaic Creek and San Francisquito Creek (VCWPD AND LACDPW 2005).

5.1.3. Los Angeles River Watershed

(Los Angeles Hydrologic Unit Code 18070105)

The Los Angeles River Watershed drains approximately 830 square miles. The Los Angeles River receives flow from tributaries in the San Gabriel Mountains, the Santa Monica Mountains, and the Santa Susana Mountains, and groundwater seeps in the Glendale Narrows, but south of San Fernando Valley flows are dominated by urban runoff and flood flows, and effluent from several municipal wastewater treatment plants (Los Angeles RWQCB 1994). South of the Glendale Narrows, the river is channelized to Willow Street in the City of Long Beach, California, where it reverts to a soft bottom. The Los Angeles River drains into the Pacific Ocean approximately 2.75 miles south of Willow Street, in the City of Long Beach (Los Angeles RWQCB 2007).

5.2 FLOODPLAINS

A floodplain is a relatively flat geographical area (e.g., a valley floor) adjacent to and formed by alluvial streams and rivers that are occasionally subject to inundation. Functioning floodplains provide flood management, acting as temporary storage of flood water. This storage of water decreases run-off velocity, reduces flood peaks, and distributes storm flows over longer time periods, causing tributary and main channels to peak at different times. Floodplains can also provide important and rich habitats as a result of the associated alluvial and riparian ecosystems.

A 100-year floodplain is an area of land that has a one percent chance of inundation every year, or once every 100 years. The Federal Emergency Management Agency (FEMA) has estimated and mapped 100-year floodplains in the Antelope Valley, Santa Clara River, and Los Angeles River Watersheds. FEMA has categorized 100-year floodplains as Flood Hazard Areas, and requires construction activities within these areas to comply with floodplain management ordinances.

Within the BRRTP study area, large 100-year floodplains have been identified in the Antelope Valley (see Figure 5-1). The largest mapped floodplain lies between the mouths of Oak Creek and Cottonwood Creek, south of the Tehachapi Mountains, and stretches south beyond the Kern – Los Angeles County line. A second large floodplain occurs near the junctions of Segments A, B, and C, along the southern slopes of the Tehachapi Mountains.

The majority of the mapped 100-year floodplains occurring within or along the study corridors are smaller than those of the Antelope Valley, and tend to be confined to the canyons of their associated waterways. Smaller 100-year floodplains have been identified along the San Andreas Fault, within San Francisquito Canyon, Bouquet Canyon, Mint Canyon, and Soledad Canyon along the Santa Clara River, along the Santa Clara River, and south of the City of Santa Clarita.

5.3 SURFACE WATER

Due to the arid climate of the northern half of the study area and the Mediterranean climate of the southern half, many of the streams are ephemeral in nature. An ephemeral stream is a stream or reach of channel that flows only in direct response to precipitation in the immediate locality, and whose channel is above the zone of saturation (Briggs 1996). Sheet flow will occur in many areas during periods of heavy rainfall (LACSD 2004).

An intermittent stream is a stream or reach of a channel that flows only during certain times of year; for example, when it receives water from a spring, seep, melting snowpack from the higher elevations, or other periodic source (Briggs 1996). The southern half of the study area contains numerous intermittent streams.

A perennial stream or river is a stream, river, or reach of channel that flows more or less continuously throughout the year, and whose upper surface is generally below the upper zone of saturation (Briggs 1996). With the exception of very wet years, water in many perennial streams in the study area percolates into the streambed, recharging groundwater basins. As a result, the stream channels of most perennial streams are dry during the summer. The Santa Clara River has natural perennial flow west of the Project area, from approximately Interstate 5 west beyond the Los Angeles – Ventura County line. More recently, perennial flow has been extended upstream toward Bouquet Canyon due to reclaimed water discharges from the Saugus Water Reclamation Plant (LACSD 2009).

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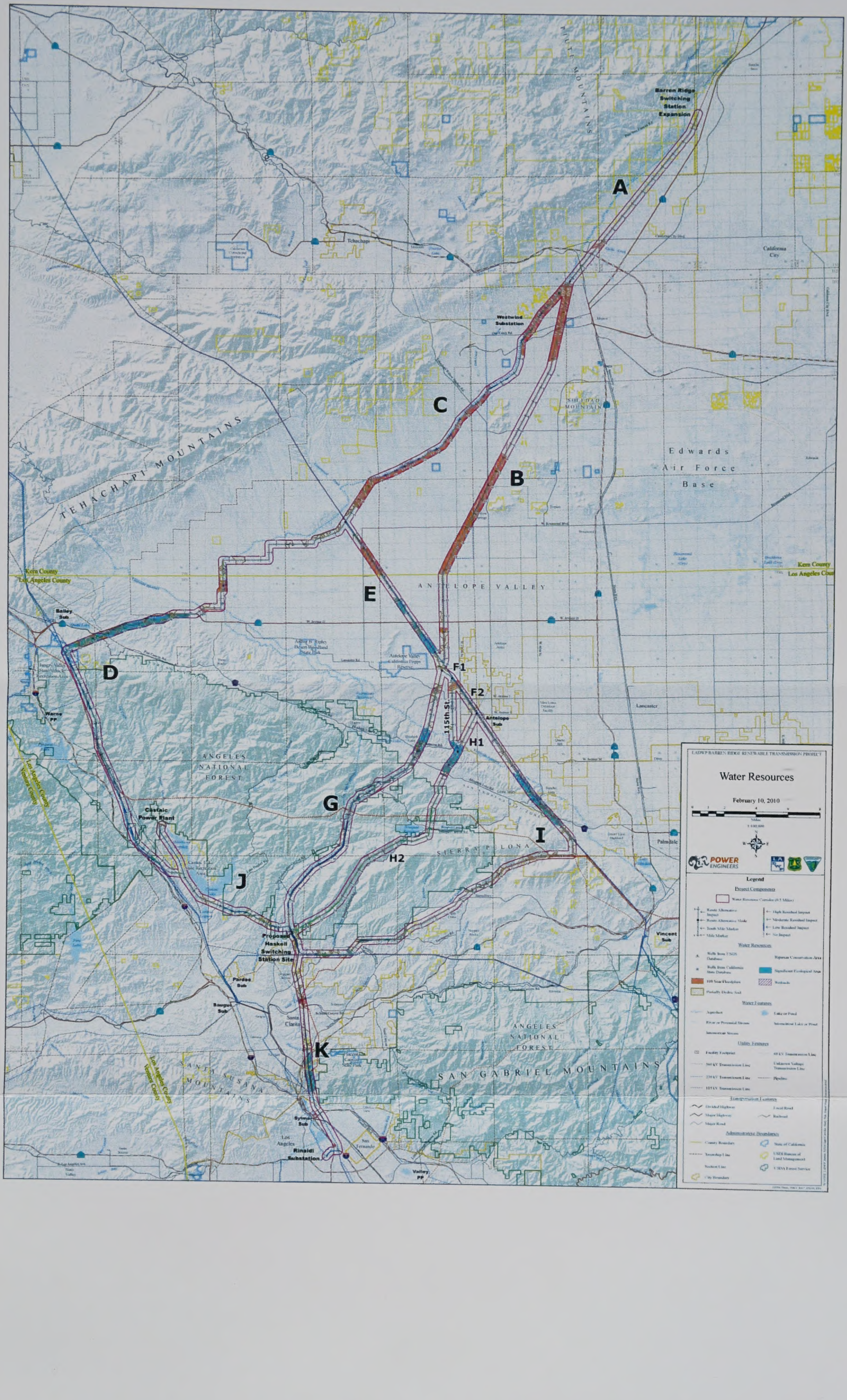
FIGURE 5-1. WATER RESOURCES MAP


Barren Ridge Switching Station Expansion
A
Tehachapi
California City
Westwind Substation
C
SOLEDAD MOUNTAIN
Edwards Air Force Base
B
TEHACHAPI MOUNTAINS
PIUTE MOUNTAINS
Kern County
Los Angeles County
ANTELOPE VALLEY
E
Bailey Sub
D
F1
F2
115th St.
Antelope Sub
H1
Lancaster
Warne PP
ANGELES NATIONAL FOREST
G
Castaic Power Plant
I
H2
SIERRA PELONA
Palmdale
J
Proposed Haskell Switching Station Site
Vincent Sub
Pardee Sub
Saugus Sub
Santa Clarita
K
ANGELES NATIONAL FOREST
SAN GABRIEL MOUNTAINS
SANTA SUSANA MOUNTAINS
Los Angeles County
Ventura County
Sylmar Sub
Rinaldi Substation
San Fernando
Valley PP
LADWP BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
Water Resources
February 10, 2010
Miles
N
W
E
S
POWER ENGINEERS
Legend
Project Components
Water Resources Corridor (0.5 Miles)
Route Alternative Impact
Route Alternative Node
Tenth Mile Marker
Mile Marker
High Residual Impact
Moderate Residual Impact
Low Residual Impact
No Impact
Water Resources
Wells from USGS Database
Riparian Conservation Area
Wells from California State Database
Significant Ecological Area
100 Year Floodplain
Wetlands
Partially Hydric Soil
Water Features
Utility Features
Transportation Features
Administrative Boundaries

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Water has been imported into the Los Angeles area since 1913, when the Los Angeles Aqueduct began delivering water from the Owens Valley. Since that time, southern California has developed a complex system of aqueducts to import water to support a rapidly growing population and economy. Aqueducts cross through the study area as they transport water from northern and central California into southern California.

The Los Angeles Aqueducts, operated by LADWP, divert water from the Mono and Owens River Basins and transport this water 338 miles to the City of Los Angeles. The original aqueduct was completed in 1913, and a second aqueduct, generally paralleling the first, was completed in 1970.

The California Aqueduct, operated by the California Department of Water Resources (DWR), transports water from northern California to southern California, where the aqueduct branches into two aqueducts; one branch terminates at the Perris Reservoir in the City of Perris, in the County of Riverside, while the other branch terminates at the Castaic Reservoir, in the southern half of the study area.

The BRRTP crosses three major watersheds: the Antelope Valley Watershed, the Santa Clara River Watershed, and the Los Angeles River Watershed. The northern portion of the Project occurs entirely within the Antelope Valley Watershed, which is a closed basin into which flow perennial and intermittent streams from the Tehachapi Mountains and the San Gabriel Mountains.

Within the Antelope Valley Watershed, streams crossed by the study corridors include Cache Creek, Oak Creek, Cottonwood Creek, Amargosa Creek, Anaverde Creek, Railroad Canyon Creek, Willow Springs, and multiple unnamed perennial and intermittent streams.

The southern portion of the Project occurs within the Santa Clara River Watershed, with a small section crossing into the Los Angeles River Watershed. The Santa Clara River is the largest river system in southern California that remains in a relatively natural state. Principle tributaries of the upper Santa Clara River include Bouquet Canyon Creek and San Francisquito Canyon Creek, both of which are crossed by the study corridors. San Francisquito Canyon Creek is an eligible Wild and Scenic River.

Also crossed by study corridors are South Portal Canyon Creek, Cherry Canyon Creek, Bee Canyon Creek, Baird Canyon Creek, Dry Canyon Creek (perennial and intermittent portions), Martindale Canyon Creek, Pettinger Canyon Creek, Vasquez Canyon Creek, Charlie Canyon Creek, Bitter Canyon Creek, Soledad Canyon Creek, Oro Fino Canyon Creek, Quigley Canyon Creek, Placerita Canyon Creek, Whitney Canyon Creek, Elsmere Canyon Creek, Liebre Gulch, West Fork Liebre Gulch, and numerous unnamed perennial and intermittent streams.

The southernmost portion of Segment K crosses into the Los Angeles River Watershed. This study corridor crosses Grapevine Canyon Creek and one unnamed stream, both of which are intermittent.

Segment C parallels the First and Second Los Angeles Aqueducts in the northernmost portion of the Project, and both aqueducts occur within the study corridor. The Los Angeles Aqueduct is crossed by Segments G and K, in the southern portion of the Project.

The California Aqueduct is crossed by Segment D near 270th Street West at mile point 13.6. Segments G, H, and I cross the California Aqueduct where the aqueduct parallels the northern slopes of Portal Ridge.

5.4 LAKES AND RESERVOIRS

The majority of water bodies in the Project area are reservoirs operated by either the California State Water Project or LADWP, as part of the Los Angeles Aqueduct system. Dry lakes, or playas, occur in the arid northern portion of the Project area, and natural lakes occur along the San Andreas Rift Zone.

Four natural lakes occur in the study area: Elizabeth Lake, Lake Hughes, Munz Lake and Quail Lake. All four lakes are rift lakes located in the San Andreas Rift Zone. Rift lakes are formed in depressions created where active or recent strike/slip faults movement has impounded drainage.

Elizabeth Lake and Lake Hughes are located approximately one mile west and four miles west of the Segment G study corridor, respectively. Existing beneficial uses of Elizabeth Lake and Lake Hughes are warm freshwater and wildlife habitats, and both contact and non-contact water recreation. In addition, Elizabeth Lake is classified as supporting habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered. Potential beneficial uses of Elizabeth Lake and Lake Hughes are municipal and domestic water supply, industrial process and service supply, agricultural supply, groundwater recharge, and freshwater replenishment (Los Angeles RWQCB 1994).

Munz Lake is situated between Elizabeth Lake and Lake Hughes. Existing beneficial uses for Munz Lake are contact and non-contact water recreation, groundwater recharge, and warm freshwater and wildlife habitats. Potential beneficial uses are municipal and domestic water supply, industrial process and service supply, agricultural supply, and freshwater replenishment (Los Angeles RWQCB 1994).

Quail Lake is located north of Segment D, near the junction of Highway 138 and the Old Ridge Route. Quail Lake was enlarged by DWR as part of the California Water Project to ensure safe water passage across the San Andreas Rift Zone. As part of the California Aqueduct system, Quail Lake provides regulatory storage for water transported via the West Branch California Aqueduct. Water is pumped into the Lake from the West Branch California Aqueduct through the Oso Pumping Plant. At the western end of the lake, water enters a pipeline leading to Warne Power Plant, and is discharged into Pyramid Lake.

Five reservoirs occur within the study area. Bouquet Reservoir is located in Bouquet Canyon, adjacent to Segment H. Bouquet Reservoir is part of the Los Angeles Aqueduct System, and provides storage for water transported to the Los Angeles area from the Owens Valley. Existing beneficial uses of Bouquet Reservoir are municipal and domestic water supply, industrial process and service supply, agricultural water supply, groundwater recharge, freshwater replenishment, wildlife habitat, warm freshwater habitat, and non-contact water recreation. Potential beneficial uses are hydropower generation and contact water recreation.

Dry Canyon Reservoir was intended by LADWP to provide storage and flow regulation for the First Los Angeles Aqueduct; however, the reservoir was taken out of service in 1966 due to seepage problems. Currently, the reservoir stores water resulting from storm events only. Existing beneficial uses of the reservoir are municipal and domestic water supply, industrial process and service supply, agricultural water supply, non-contact water recreation, wildlife habitat, and warm freshwater habitat. Potential beneficial uses are groundwater recharge, freshwater replenishment, hydropower generation, and contact water recreation.

Castaic Lake is a reservoir that is part of the California State Water Project. The reservoir is the terminus of the west branch of the California Aqueduct. Water is released from Castaic Lake into Castaic Lagoon, immediately downstream of the reservoir. Existing beneficial uses for both Castaic Lake and Castaic Lagoon are municipal and domestic water supply, industrial process and service supply, agricultural water supply, groundwater recharge, contact and non-contact water recreation, wildlife habitat, and warm freshwater habitat. In addition, Castaic Lake is used for hydropower generation, habitat for rare, threatened, or endangered species, and spawning, reproduction, and/or early development habitat for fish species.

Pyramid Lake is located west of Segment D near milepost 29, on the border of the Angeles and Los Padres National Forests. Pyramid Lake is operated by the DWR as part of the California Aqueduct system, receiving water from the West Branch California Aqueduct via Quail Lake. The reservoir stores water for delivery to southern California, provides regulated storage for the Castaic Power Plant on Castaic Lake, and also provides flood protection for Piru Creek. Existing beneficial uses for Pyramid Lake are municipal and domestic water supply, industrial service water supply, industrial process water supply, agricultural supply, groundwater recharge, hydropower generation, contact and non-contact water recreation, warm and cold freshwater habitat, wildlife habitat, and rare, threatened, or endangered species habitat.

The Van Norman – Los Angeles Reservoir Complex consists of the Lower Van Norman Reservoir and the Los Angeles Reservoir. The Van Norman Reservoir was built by LADWP in 1916-1918, but sustained damage during the Sylmar Earthquake that occurred on February 9, 1971 and was replaced by the Los Angeles Reservoir. The Lower Van Norman Reservoir (also called Van Norman Lake) is what remains of the original reservoir. Los Angeles Reservoir, which replaced Van Norman Reservoir, is immediately north of the Lower Van Norman Reservoir. Existing beneficial uses of Lower Van Norman Reservoir are municipal and domestic water supply, industrial service and process supply, groundwater recharge, and wildlife habitat. Existing beneficial uses for the Los Angeles Reservoir are municipal and domestic water supply, industrial service and process supply, groundwater recharge, non-contact water recreation, wildlife habitat, warm freshwater habitat, and habitat for rare, threatened, or endangered species. Contact water recreation is a potential beneficial use of the Los Angeles Reservoir; however, public access to the reservoir complex is restricted by LADWP (Los Angeles RWQCB 1994).

While these lakes and reservoirs occur within the study area, only one occurs within or is crossed by a study corridor. Castaic Lagoon is crossed by Segment J just below the dam.

5.5 HYDRIC SOILS

Hydric soils are soils that are saturated at or near the surface, whether by flooding or high groundwater tables, of a frequency or duration that promotes the development of anaerobic conditions that affect plant growth and promote the establishment of hydrophytic vegetation. Some hydric soils have phases that are not hydric, depending on groundwater table, flooding, and ponding characteristics. Hydric soils were used in combination with land cover types to identify wetlands not mapped by NWI.

Digital soils data for the Soil Survey Geographic (SSURGO) were obtained from the Natural Resources Conservation Service (NRCS) for all quadrangles in the study area. SSURGO data are classified as follows: all hydric soils, partially hydric soils, not hydric soils, and no data available.

SSURGO data revealed one known occurrence of hydric soils. This location is west of Soledad Mountain along Mojave Tropico Road, and is approximately 1.5 miles east of the study corridor (Segment B). The data revealed many occurrences of partially hydric soils throughout the study area. In the northern portion, partially hydric soils are widespread throughout the floor of the Antelope Valley; along Segment D and within the southern portion in general, partially hydric soils are found primarily within canyons and along drainages.

5.6 WETLANDS

The regulatory definition of Section 404 CWA jurisdictional wetlands, according to the U.S. Environmental Protection Agency (EPA) and the USACE are "those areas that are inundated or saturated by surface or groundwater at a frequency or duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."

Digital and hard copy NWI maps were obtained from the U.S. Fish and Wildlife Service (USFWS) for all quadrangles. Hard copy maps were digitized by POWER. NWI provides approximate locations of wetlands one acre or larger and may or may not be jurisdictional based on the 1987 USACE Wetlands Delineation Manual.

Data provided by the NWI revealed three types of wetlands occurring within the study corridors.

Palustrine Emergent Saturated wetlands (PEMB) are characterized by erect, rooted, herbaceous vegetation, present throughout most of the growing season except in the driest years. PEMB wetlands are saturated to the surface for extended periods during the growing season, but surface water is seldom present. There are four occurrences of PEMB wetlands within the study corridors. In Segment G, two PEMB wetlands occur approximately 0.3 mile south of Johnson Road between mile 5.4 and 5.6; within Segment H, two PEMB wetlands occur south of the intersection of Kellogg Valley Road and Power Line Road between mile 3.7 and 3.8, and two PEMB wetlands occur approximately 0.2 mile south of Elizabeth Lake Road between mile 4.4 and 4.5.

Palustrine Forested Temporarily Flooded wetlands (PFOA) are characterized by woody vegetation 20 feet tall or higher. Surface water in PFOA wetlands is present for brief periods during the growing season, but the water table usually lies well below the soil surface. One PFOA wetland occurs within the study corridors. This wetland is within the Segment H study corridor between mile 8.0 and 8.1, east of Bouquet Reservoir where Spunky Canyon Road meets Bouquet Canyon Road.

Palustrine Unconsolidated Bottom Permanently Flooded, Excavated basins (PUBFx) are artificially excavated basins characterized by open water habitat with erect, rooted, vegetative cover of less than 30 percent. Vegetation is usually found in shallow waters around the edges of the basin. PUBF basins are flooded throughout the year in most years; if surface water is absent, water is usually present at or very near the soil surface. This basin occurs on private property approximately 0.4 mile east of Johnson Siphon, within Segment H between mile 2.1 and 2.2.

5.7 RIPARIAN CONSERVATION AREAS AND SIGNIFICANT ECOLOGICAL AREAS

Riparian Conservation Areas (RCAs) combine the ecologic concerns of riparian ecosystems with the hydrologic concerns of floodplains and streamside slopes. RCAs have been established within the Angeles National Forest to protect, maintain, or improve water quality, site productivity, channel stability, riparian vegetation, and riparian-dependent species and habitats.

Riparian Conservation Areas are associated with many streams within the ANF, including West Fork Liebre Gulch, Liebre Gulch, San Francisquito Canyon, Dry Canyon, Bee Canyon, Pettinger Canyon, Munz Canyon, Mint Canyon, and multiple unnamed streams.

Significant Ecological Areas (SEAs) are defined by the County of Los Angeles as "ecologically important or fragile land and water areas, valuable as plant and animal communities. These areas are classified as one or more of the following: 1) habitats for rare and endangered species of plants and animals; 2) restricted natural communities—ecological areas which are scarce on a regional basis; 3) habitat restricted in distribution in the county; 4) breeding or nesting grounds; 5) unusual biotic communities; 6) sites with critical wildlife and fish value; and 7) relatively undisturbed habitat."

The following SEAs are located within the Project area:

Santa Clara River SEA
San Andreas Rift Zone SEA
Cruzan Mesa Vernal Pools SEA
Joshua Tree Woodlands SEA

Mountain Conservancy SEA
San Francisquito Canyon SEA

For detailed information on RCAs and SEAs in the Project area, refer to the Biological Resources Technical Report.

5.8 GROUNDWATER AND WELLS

As precipitation and snowmelt flow into creeks, streams, and rivers, much of the water percolates into the ground. These alluvial groundwater basins cover nearly 40 percent of the State of California. Approximately 43 percent of Californians obtain drinking water from groundwater, through both municipal and privately owned wells. The BRRTP study corridors cross four groundwater basins and one sub-basin. These basins are described in California's Groundwater Bulletin 118 and summarized below.

Locations of wells were obtained from the USGS and DWR. Depth-to-water well measurements are used to monitor groundwater basin levels, to record trends in groundwater depth, and to monitor groundwater quality.

In the northern section of the Project, the study corridors cross the Fremont Valley Groundwater Basin and the Antelope Valley Groundwater Basin. In the southern section of the Project, the study corridors cross the Acton Valley Groundwater Basin, the Santa Clara River Valley East Sub-basin, and the San Fernando Valley Groundwater Basin. Current groundwater levels and general trends in groundwater levels are obtained through depth-to-water measurements conducted in USGS wells and wells operated by the State of California.

Two wells occur within the study corridors. The first well (California State ID #08N16W04N001S) is located within Segment D, at mile marker 11.2. The most recent measurement from this well dates from 1962, when the depth-to-water measurement was 226.2 feet; however, a well approximately 0.75 mile southeast near Holiday Lake had a depth-to-water measurement of 246.3 feet in March 2008.

The second well (California State ID #07N14W10P001S) is located within Segment F adjacent to Avenue I at mile post 1.2. The most recent measurements at this well date from 1963, when the depth-to-water measurement was 318.2 feet; however, a USGS well, approximately two miles east of this location, had a depth-to-groundwater measurement of 242.06 feet in March 2008 (USGS 2009).

5.8.1. Fremont Valley Groundwater Basin (Groundwater Basin Number 6-46)

The Fremont Valley Groundwater Basin drains a surface area of 335,000 acres (523 square miles). The basin underlies the Fremont Valley, and is bounded on the east by crystalline rocks of the Summit Range, Red Mountain, Lava Mountains, Rand Mountains, Castle Butte, Bissel Hills, and Rosamond Hills. The basin is bounded on the southwest by the Antelope Valley Groundwater Basin along a groundwater divide approximated by a line connecting the mouth of Oak Creek through Middle Butte to exposed basement rock near Gem Hill.

The primary water-bearing layer in this basin is Quaternary alluvium, which is thickest around the basin margins, with a depth of approximately 1,190 feet. The alluvium thins toward the center of the basin. Groundwater in the basin is generally unconfined, but restricted by the Garlock and El Paso fault zones and partially restricted by the Muroc fault zone.

Total storage capacity of the Fremont Valley Groundwater Basin is approximately 4,800,000 acre feet (af). Well measurements indicate that from 1957 to 1999 groundwater levels in the southwestern part of the basin declined approximately nine feet. In the vicinity of the study corridors that cross the Fremont

Valley Groundwater Basin, recent depth-to-water measurements in USGS wells ranged between 117.37 feet and 345.04 feet (DWR 2003) (Table 5-1).

5.8.2. Antelope Valley Groundwater Basin (Groundwater Basin Number 6-44)

The Antelope Valley Groundwater Basin drains a surface area of approximately 1,010,000 acres (1,580 square miles). The basin underlies an extensive alluvial valley in the western Mojave Desert, and is bounded on the northwest by the Garlock fault zone at the base of the Tehachapi Mountains, on the southwest by the San Andreas fault zone at the northern base of the San Gabriel Mountains, on the east by ridges, buttes, and low hills that form a surface and groundwater drainage divide, and on the north by the Fremont Groundwater Basin described above.

The primary aquifers in this basin are unconsolidated alluvial and lacustrine deposits from the Pleistocene and Holocene, forming an upper aquifer and a lower aquifer. The upper aquifer is the primary source of groundwater in the Antelope Valley, and is generally unconfined. The basin is comprised of three large sediment-filled structural sub-basins separated by extensively faulted, elevated bedrock. Numerous faults displace the water table and impede groundwater flow within the basin.

Total storage capacity of the Antelope Valley Groundwater Basin is between 68,000,000 and 70,000,000 af, except for an area of the basin where the groundwater is between 20 and 220 feet in depth. In that area, the storage capacity is approximately 5,400,000 af. Between 1975 and 1998, groundwater in this basin ranged from an increase of 84 feet to a decrease of 66 feet. The area of the basin that experienced a decrease in groundwater depth is along the State Route 14 corridor from Palmdale to Rosamond. In the vicinity of the study corridors that cross the Antelope Valley Groundwater Basin, recent depth-to-water measurements in USGS wells ranged between 152.83 feet and 390.79 feet (DWR 2003) (Table 5-1).

5.8.3. Acton Valley Groundwater Basin (Groundwater Basin Number 4-5)

The Acton Valley Groundwater Basin drains a surface area of approximately 8,270 acres (12.9 square miles). The basin is unconfined, and groundwater is found in alluvium and stream terrace deposits. The basin is bounded by the Sierra Pelona on the north, and the San Gabriel Mountains on the south, east, and west.

Groundwater in the basin is unconfined. The water-bearing formations in this basin are Holocene alluvial deposits and Pleistocene stream terrace deposits. The alluvial deposits reach a maximum thickness of approximately 225 feet in the Santa Clara River channel near the community of Acton, and thin out east and west of this area. The stream terrace deposits are found on low-lying flanks of the foothills and upper reaches of the tributaries of the Santa Clara River, and reach a maximum thickness of approximately 210 feet north of Acton.

Total storage capacity of the Acton Valley Groundwater Basin is approximately 40,000 af. Groundwater levels declined from the 1950s through the mid-1970s; groundwater levels increased from the late 1970s through the mid-1980s, but began declining again. Current depth-to-water measurements were unavailable for the Acton Valley Groundwater Basin (DWR 2003) (Table 5-1).

5.8.4. Santa Clara River Valley East Sub-basin (Groundwater Basin Number 4-4.07)

The Santa Clara River Valley East Sub-basin drains a surface area of approximately 66,200 acres (103 square miles). The basin is bounded on the north by the Piru Mountains, on the west by impervious rocks of the Modelo and Saugus Formations and a constriction in the alluvium, on the south by the Santa Susana Mountains and the San Gabriel Mountains, and on the east by the San Gabriel Mountains.

Groundwater in the sub-basin is found in Holocene alluvium, Pleistocene terrace deposits, and in the late Pliocene to early Pleistocene Saugus Formation. Groundwater is generally unconfined in the alluvium, but may be confined, semi-confined, or unconfined in the Saugus Formation. Alluvium deposits reach a maximum thickness of approximately 240 feet below the Santa Clara River channel and thin laterally away from the channel, and east and west of the community of Acton. The terrace deposits generally lie above the water table, and are found on the low-lying flanks of the foothills and upper reaches of the Santa Clara River tributaries. These deposits reach thicknesses of up to 200 feet near Saugus, Agua Dulce, and Acton. The Saugus Formation is up to 8,500 feet thick, and is not widely utilized as a groundwater source for municipal and agricultural uses as the water can be brackish. The maximum depth to the base of fresh water ranges from 1,500 feet northeast of the San Gabriel Fault to 5,500 feet between the San Gabriel Fault and the Holser Fault.

Although the Saugus Formation is displaced by both the San Gabriel and Holser Faults, groundwater movement in the Formation has not been affected. The water-bearing alluvial deposits have not been affected by fault displacement.

Total storage capacity of the sub-basin is approximately 240,000 af in the alluvial aquifer, and approximately 1,650 af in the Saugus Formation. Between 1970 and 2000, groundwater levels were relatively stable with depth-to-water levels in the alluvial aquifer measuring from between approximately 13 feet to 37 feet in the western portion of the sub-basin, 10 feet to 50 feet in the central portion, and 15 feet to 100 feet in the eastern portions of the sub-basin. In the Saugus Formation, depth-to-water levels have also remained stable. In the vicinity of the study corridors adjacent to the Santa Clara River Valley East Sub-basin, recent depth-to-water measurements in USGS wells ranged between 9.60 feet and 10.20 feet (DWR 2003) (Table 5-1).

5.8.5. San Fernando Valley Groundwater Basin (Groundwater Basin Number 4-12)

The San Fernando Valley Groundwater Basin drains a surface area of approximately 145,000 acres (226 square miles). The basin is bounded on the north and northwest by the Santa Susana Mountains, on the north and northeast by the San Gabriel Mountains, on the east by the San Rafael Hills, on the south by the Santa Monica Mountains and Chalk Hills, and on the west by the Simi Hills. This groundwater basin includes the water-bearing formations beneath the San Fernando Valley, Tujunga Valley, Browns Canyon, and the alluvial areas surrounding the Verdugo Hills near La Crescenta and Eagle Rock.

Groundwater in the basin is found in the lower Pleistocene Saugus Formation and the Pleistocene and Holocene alluvium. Groundwater is unconfined with the exception of the western part of the basin and the Sylmar and Eagle Rock areas. The Holocene alluvium reaches thicknesses of approximately 100 feet in the northern part of the basin, 400 feet in the eastern part, 800 feet in the western part, and 900 feet near Burbank. The Saugus Formation is approximately 2,000 to 3,000 feet thick in the eastern and western parts of the basin, and up to approximately 6,400 feet thick in the center of the basin.

Displacement by the Verdugo Fault and/or the Eagle Rock Fault causes groundwater to flow to the south near the mouth of Verdugo Canyon. The Verdugo Fault also acts as a partial barrier that causes a fluctuation in groundwater levels near the Hanson Spreading Grounds. Groundwater levels are also affected by unnamed faults in the Sunland, Chatsworth, and San Fernando areas, and at the mouths of the Little Tujunga and Big Tujunga Canyons. In the northern part of the basin, groundwater movement is affected by the Little Tujunga syncline and folds associated with the Northridge Hills, Mission Hills, and Lopez faults. Other barriers to groundwater movement in the basin are subsurface dams in the Pacoima Wash and in Verdugo Canyon.

Total storage capacity of the San Fernando Valley Groundwater Basin is calculated to be approximately 3,670,000 af. This includes the storage capacity values for the San Fernando, Sylmar, Verdugo, and Eagle Rock Basins. Between approximately 1983 and 2003, water levels have remained relatively stable.

Hydrographs show 1998 groundwater levels roughly equal to 1980 groundwater levels, with the exception of groundwater levels near La Crescenta, which were approximately 60 feet lower than 1980 levels (DWR 2003) (Table 5-1).

TABLE 5-1. WELLS AND GROUNDWATER LEVELS IN THE PROJECT AREA.

Well Number	Groundwater Basin	Depth-to-water Measurements (feet) (date)		
		Low	High	Recent
345701118103601 – 010N012W20C006S*	Fremont	117.85 (03/26/2007)	101.60 (03/27/1978)	117.37 (03/25/2008)
350212118083701 – 011N012W22F002S*	Fremont	260.50 (06/03/1974)	240.29 (03/24/2008)	240.29 (03/24/2008)
350637118052901 – 032S036E35D001M*	Fremont	274.62 (03/24/2008)	263.93 (08/14/1957)	274.62 (03/24/2008)
351528118003201 – 031S037E04Q001M*	Fremont	415.45 (05/16/1985)	152.00 (02/15/1974)	280.75 (03/26/2008)
350505118065001 – 012N012W35R001S*	Fremont	325.90 (03/25/2008)	316.11 (08/14/1957)	325.90 (03/25/2008)
350055118172601 – 011N013W29M001S*	Fremont	345.04 (09/05/2008)	278.40 (11/01/1984)	345.04 (09/05/2008
344122118125701 – 007N013W13N001S*	Antelope Valley	157.55 (12/08/1978)	141.91 (03/22/2000)	152.83 (03/26/2008)
344658118234201 – 008N014W17M001S*	Antelope Valley	190.00 (11/20/1958)	172.00 (11/01/1958)	174.33 (03/27/2008)
345423118152101 – 009N013W04A001S*	Antelope Valley	193.45 (04/12/1994)	69.70 (11/15/1929)	182.73 (03/26/2008)
344400118184501 – 009N014W01H001S*	Antelope Valley	190.47 (03/26/2008)	115.00 (05/23/1956	190.47 (03/26/2008)
345202118133501 – 003N013W14Q001S*	Antelope Valley	202.88 (03/30/1978)	176.00 (11/15/1957)	190.65 (03/26/2008)
345202118133501 – 009N013W14Q001S*	Antelope Valley	202.88 (03/30/1978	176.00 (11/15/1957	190.65 (03/26/2008)
343932118144001 – 007N013W34B001S*	Antelope Valley	371.14 (10/27/1971)	201.15 (03/15/2001)	208.87 (03/26/2008)
344403118175001 – 008N013W31Q001S*	Antelope Valley	293.10 (10/02/1962)	210.74 (04/18/1995)	215.95 (03/27/2008)
345100118161801 – 009N013W21N001S*	Antelope Valley	223.45 (09/17/2002)	194.92 (05/10/2001)	216.47 (03/26/2008)
344209118183801 – 007N014W13A001S*	Antelope Valley	307.23 (10/22/1970)	219.00 (10/14/1953)	235.87 (03/26/2008)

Well Number	Groundwater Basin	Depth-to-water Measurements (feet) (date)		
		Low	High	Recent
344848118172301 – 008N013W05E001S*	Antelope Valley	340.20 (05/22/1962)	104.00 (12/03/1945)	238.62 (03/26/2008)
344848118172301 – 008N013W05E001S*	Antelope Valley	340.20 (05/22/1962)	104.00 (12/03/1945	238.62 (03/26/2008)
344652118185701 – 008N014W24C001S*	Antelope Valley	289.02 (12/26/1967)	138.23 (03/18/1998)	242.06 (03/26/2008)
344819118175201 – 008N013W07B001S*	Antelope Valley	290.83 (05/18/1983)	236.00 (03/15/2001)	251.07 (03/26/2008)
344751118210701 – 008N014W10L001S*	Antelope Valley	276.05 (05/18/1983)	233.79 (03/15/2001)	251.19 (03/27/2008)
344000118130601 – 007N013W26J002S*	Antelope Valley	329.60 (08/24/1972)	216.00 (04/05/1957)	254.56 (03/26/2008)
344607118195901 – 008N014W23G001S*	Antelope Valley	293.69 (02/22/1979)	182.40 (07/22/1952)	257.10 (03/26/2008)
344907118260901 – 008N015W02A001S*	Antelope Valley	302.71 (03/27/2002)	264.17 (03/31/2004	268.13 (03/27/2008)
344946118271601 – 009N015W34B002S*	Antelope Valley	269.51 (03/27/2008)	257.61 (03/27/2002)	269.51 (03/27/2008)
344844118254501 – 008N015W01E001S*	Antelope Valley	272.98 (03/27/2008)	155.00 (04/15/1955)	272.98 (03/27/2008)
345143118183401 – 003N014W24A001S*	Antelope Valley	276.33 (03/26/2008)	267.08 (05/25/2005)	276.33 (03/26/2008)
343741118110301 – 006N012W07A001S*	Antelope Valley	381.50 (03/25/2003)	284.10 (03/12/1957)	296.70 (03/25/2008)
344916118203301 – 009N014W35N001S*	Antelope Valley	301.60 (03/29/2007)	287.33 (05/10/2001)	299.793 (03/28/2008)
345122118220801 – 003N014W21G001S*	Antelope Valley	325.29 (03/26/2008)	324.44 (05/25/2005	325.29 (03/26/2008)
345000118302201 – 009N015W30Q001S*	Antelope Valley	394.55 (03/15/1990)	336.39 (04/13/1965	390.79 (03/25/2008)
4N15W02J02**	Acton Valley	95.2 (10/17/1990)	1.0 (05/19/1999)	1.2 (11/27/2007)
4N15W23Q02**	Acton Valley	90.1 (11/08/1977)	3.8 (11/27/1978)	17.3 (05/16/2006)
4N14W17H01**	Acton Valley	33.4 (04/15/1983)	13.2 (05/23/1995)	30.0 (05/08/2002)

Well Number	Groundwater Basin	Depth-to-water Measurements (feet) (date)		
		Low	High	Recent
4N15W15A01**	Acton Valley	57.1 (11/29/1961)	11.2 (04/25/84)	30.7 (11/28/2005)
4N15W23F06**	Acton Valley	113.0 (04/01/1999)	14.0 (11/30/1983)	70.0 (04/15/2008)
4N15W26K01**	Acton Valley	98.6 (10/17/1990)	7.8 (04/21/1969)	80.5 (05/18/2004)
342612118163401 – 004N013W07Q001S*	Santa Clara River Valley East	9.60 (03/25/2008)	3.56 (03/13/1980)	9.60 (03/25/2008)
4N15W1N02**	Santa Clara River Valley	123.0 (11/19/1963)	7.0 (5/12/1999)	10.4 (11/13/2001)
4N15W19D01**	Santa Clara River Valley	85.0 (10/31/1991)	12.0 (1/30/1984)	10.7 (6/15/1993)
342609118131101 – 004N013W15A001S*	Santa Clara River Valley East	29.55 (09/21/1965)	6.64 (03/13/1980)	10.20 (03/25/1908)
4N15W20F02**	Santa Clara River Valley	79.9 (8/24/1977)	0.8 (6/18/1985)	19.1 (10/25/1993)
4N15W18N03**	Santa Clara River Valley	85.0 (10/31/1991)	12.0 (01/30/1984)	33.0 (05/08/2008)
4N15W20B01**	Santa Clara River Valley	170.8 (04/21/1998)	1.8 (06/09/1983)	33.6 (03/20/2007)
4N15W21K01**	Santa Clara River Valley	113.0 (10/31/1991)	24.0 (04/01/1998)	67.0 (05/04/2008)
2N15W04J01**	San Fernando Valley	20.0 (10/16/91)	6.7 (01/20/67)	16.2 (05/15/08)
3N15W29L01**	San Fernando Valley	23.0 (05/13/1993)	0.0 (04/06/1990)	21.40 (04/14/2007)
2N15W04B02**	San Fernando Valley	93.4 (01/11/1979)	37.1 (04/01/1997)	55.3 (06/11/2008)
4N15W21K01**	San Fernando Valley	113.0 (10/31/1991)	24.0 (04/01/1998)	67.0 (05/04/2008)
2N15W07A02**	San Fernando Valley	178.7 (05/27/1997)	117.8 (11/22/1974)	170.4 (05/22/2007)
2N15W08H01**	San Fernando Valley	259.7 (02/06/1991)	230.3 (09/14/1967)	256.9 (06/25/2008)
2N15W09G02**	San Fernando Valley	332.3 (10/17/1994)	289.2 (12/12/1966)	339.4 (04/29/2008)

*Well monitored by the U. S. Geological Survey.

**Well monitored by the Los Angeles Department of Water and Power.

5.9 WATER QUALITY

Water quality is the physical, chemical, and biological characteristics of water, when assessed according to standards related to ecosystem health, the safety of drinking water, and the safety of human contact. The State of California Water Resources Control Board and the nine Regional Boards are responsible for setting policies and developing regulations for the implementation of water quality control programs mandated by federal and state water quality statutes and regulations. Water Quality Control Plans (Basin Plans), developed and implemented by the RWQCBs, consider regional beneficial uses, water quality characteristics, and water quality problems (RWQCB 1994, RWQCB 1995).

Surface and groundwater quality objectives in the study area are described in the Los Angeles Region Water Quality Control Plan and the Water Quality Control Plan for the Lahontan Region. Additional groundwater quality objectives are described in California's Groundwater Bulletin 118. Water quality objectives were established to protect the existing and potential beneficial uses of surface and groundwater.

Beneficial uses are goals or desired uses of a water body as specified in the Basin Plans, and may include existing, proposed or, in some cases, historic uses. In the BRRTP study area, water bodies with designated beneficial uses are listed in Table 5-2.

Beneficial uses for surface waters in the BRRTP area include Municipal and Domestic Supply (MUN), Industrial Service Supply (IND), Industrial Process Supply (PROC), Agricultural Supply (AGR), Ground Water Recharge (GWR), Freshwater Replenishment (FRSH), Hydropower Generation (POW), Water Contact Recreation (REC-1), Non-contact Water Recreation (REC-2), Commercial and Sport Fishing (COMM), Warm Freshwater Habitat (WARM), Cold Freshwater Habitat (COLD), Wildlife Habitat (WILD), Rare, Threatened, or Endangered Species (RARE), Spawning, Reproduction, and/or Early Development (SPWN), and Wetland Habitat (WET).

It may be noted that some designated beneficial uses are obviated by more recent laws and regulations such as those protecting drinking water quality in open reservoirs. In response to increasingly stricter drinking water regulations, many reservoirs that store treated potable water are proposed for covering, which potentially would eliminate some beneficial uses. For example, the proposed covering of the Los Angeles Reservoir to achieve more stringent drinking water quality standards would no longer provide potential for groundwater recharge, neither contact nor non-contact recreation, and/or wildlife habitat, as stated in the Basin Plan.

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TABLE 5-2. BENEFICIAL USES AND SECTION 303(D) LISTING OF SURFACE WATER IN THE BRRTP STUDY CORRIDORS.

Water Body	Beneficial Use														
	MUN	IND	PROC	AGR	GWR	FRSH	POW	REC1/ COMM	REC2	WARM	COLD	WILD	RARE	SPWN	WET
Fremont / Antelope Valley Watershed															
Cache Creek	E			E	E			E	E	E		E			
Oak Creek	E	E		E	E			E/E	E	E		E			
Minor surface waters	E			E	E			E/E	E	E		E			
Santa Clara River Watershed															
Bouquet Canyon	E/I	E/I	P/I	P/I	E	P		Em	E	P	E	E	E	P	E
Bouquet Reservoir	E	E	E	E	E	E	P	Pk	E	E		E			
Castaic Lagoon	E*	E	E	E	E	E		E	E	E		E			
Castaic Lake	E	E	E	E	E	E	E	E	E	E		E	E	E	
Drinkwater Reservoir	P*				E			Pk	E	P		E	E		E
Dry Canyon Creek	I	I	I	I	I	I		I	I	I		E			
Dry Canyon Reservoir (j)	E	E	E	E	P	P	P	Pk	E	E		E			
Lake Elizabeth	P	P	P	P	P	P		E	E	E		E	E		
Lake Hughes	P	P	P	P	P	P		E	E	E		E			
Munz Lake	P*	P	P	P	E	P		E	E	E		E			
Pyramid Lake	E	E	E	E	E	P	E	E	E	E	E	E	E		
San Francisquito Canyon	I	I	I	I	I	I		I	I	I		E	E	I	E
Santa Clara River (Reach 7)	E*	E	E	E	E	E		E	E	E		E	E		E
Los Angeles River Watershed															
Lower Van Norman Reservoir	E*	E	E		E			E	E	E		E	E		
Los Angeles Reservoir	E	E	E		P			Pk	E	E		E	E		

E – Existing beneficial use
P – Potential beneficial use
I – Intermittent beneficial use

j – Out of service
k – Public access to reservoir and its surrounding watershed prohibited by LADWP
m – Access prohibited by Los Angeles County DPW in concrete-channelized areas

* State Board Resolution No. 88-63 (Sources of Drinking Water) followed by Regional Board Resolution No. 89-03 (Incorporations of Sources of Drinking Water into the Water Quality Control Plans) states that "All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic waters supply and should therefore be designated by the Regional Boards."

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5.9.1. Surface Water Quality

Each Regional Board has developed narrative or numerical water quality objectives for various parameters. These objectives apply to all inland surface waters, enclosed bays, wetlands and estuaries.

TABLE 5-3. SUMMARY OF WATER QUALITY OBJECTIVES FOR SURFACE WATERS IN THE PROJECT AREA[1]

Water Quality Objective	Lahontan RWQCB	Los Angeles RWQCB
Ammonia (Total)	23 mg/L (1-hour average, at pH 7.0 and 20°C)	23 mg/L (1-hour average, at pH 7.0 and 20°C)
Bacteria (Fecal Coliform)	Not to exceed a log mean of 20/100 ml during 30-day period	Not to exceed a log mean of 200/100 ml (REC-1), 2000/100 ml (REC-2) during 30-day period.
Bioaccumulation	--	Toxic pollutants shall not be present at levels that will bioaccumulate in aquatic life to levels which are harmful to aquatic life or human health.
Biochemical Oxygen Demand	--	Waters shall be free of substances that result in increases in the BOD which adversely affect beneficial uses.
Biostimulatory Substances	Shall not occur in concentrations that promote aquatic growths that adversely affect beneficial uses.	Shall not occur in concentrations that promote aquatic growth to the extent that such growth causes nuisance or adversely affects beneficial uses.
Chemical Constituents	Shall not occur in concentrations that adversely affect beneficial uses.	Shall not contain concentrations in amounts that adversely affect beneficial uses.
Chlorine, Total Residual	Shall not exceed a median value of 0.002 mg/L or a maximum value of 0.003 mg/L (based on daily measurements over 6-month period).	Shall not be present in concentrations that exceed 0.1 mg/L and shall not persist in receiving waters at any concentration that causes impairment of beneficial uses.
Color	Shall not contain coloration that causes nuisance or adversely affects beneficial uses.	Shall not contain coloration that causes nuisance or adversely affects beneficial uses.
Exotic Vegetation	--	Shall not be introduced around stream courses to the extent that such growth causes nuisance or adversely affects beneficial uses.
Floating Material	Waters shall not contain floating material, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses.	Waters shall not contain floating material, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses.
Methylene Blue Activated Substances (MBAS)	--	MBAS concentrations shall not be higher than 0.5 mg/L in waters designated MUN.
Mineral Quality[2]	--	TDS: 800 mg/L Sulfate: 150 mg/L Chloride: 100 mg/L Boron: 1.0 mg/L Nitrogen: 5 mg/L SAR[3]: 5 mg/L

Water Quality Objective	Lahontan RWQCB	Los Angeles RWQCB
Nondegradation of Aquatic Communities and Populations	Wetlands shall be free from substances attributable to wastewater & other undesirable discharges; all wetlands shall be free from activities that would substantially impair naturally occurring biological communities.	--
Nitrogen (Total), Nitrate, Nitrite[4]	--	Shall not exceed: Total Nitrogen: 10 mg/L Nitrate: 45 mg/L Nitrite: 1 mg/L
Oil and Grease	Shall not contain oils, greases, waxes, or other materials in concentrations that result in visible film or coating on water surface of objects, that cause nuisance or adversely affect beneficial uses.	Shall not contain oils, greases, waxes, or other materials in concentrations that result in visible film or coating on water surface of objects, that cause nuisance or adversely affect beneficial uses.
Oxygen, Dissolved	One day minimum not to be less than: WARM: 3.0 mg/L WARM & SPWN: 5.0 mg/L COLD: 4.0 mg/L COLD & SPWN: 8.0 mg/L	Not to be less than 5.0 mg/L, or: WARM: 5 mg/L COLD: 6 mg/L COLD & SPWN: 7 mg/L
Pesticides	Waters designated MUN shall not contain concentrations in excess of those specified in Table 64444-A of Section 64444 of Title 22 of the California Code of Regulations.	Waters designated MUN shall not contain concentrations in excess of those specified in Table 64444-A of Section 64444 of Title 22 of the California Code of Regulations.
pH	Determined on a case-by-case basis; in general, pH must range from 6.5 – 8.5.	Ambient pH levels shall not be changed more than 0.2 units from natural conditions as a result of waste discharge.
Polychlorinated Biphenyls (PCBs)	--	The purposeful discharge of PCBs is prohibited. Uncontrollable discharges are limited to 70 pg/L (for protection of human health) and 14 ng/L (for protection of aquatic life).
Radioactive Substances	Shall not occur in concentrations in excess of those specified in Table 4 of Section 64443 of Title 22 of the California Code of Regulations.	Shall not occur in concentrations in excess of those specified in Table 4 of Section 64443 of Title 22 of the California Code of Regulations.
Sediment	Suspended sediment load and suspended sediment discharge rate shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.	--
Solid, Suspended, or Settleable Materials	Waters shall not contain substances or settleable materials in concentrations that cause nuisance or adversely affect beneficial uses.	Waters shall not contain substances or settleable materials in concentrations that cause nuisance or adversely affect beneficial uses.
Taste and Odor	Waters shall not contain taste or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses.	Waters shall not contain taste or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses.

Water Quality Objective	Lahontan RWQCB	Los Angeles RWQCB
Temperature	Temperature of WARM waters shall not be altered by more than 5° F above of below the natural temperature; temperature of COLD waters shall not be altered.	Temperature of WARM waters shall not be altered by more than 5° above natural temperature, and shall not be raised above 80° as result of waste discharges. Temperature of COLD waters shall not be altered by more than 5° above the natural temperature.
Toxicity	Waters shall not contain toxic substances in concentrations that are toxic to, or produce detrimental physiological responses in human, plant, animal, or aquatic life.	Waters shall not contain toxic substances in concentrations that are toxic to, or produce detrimental physiological responses in human, plant, animal, or aquatic life.
Turbidity	Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses; increases in turbidity shall not exceed natural levels by more than 10 percent.	Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Controllable increases in turbidity shall not exceed 20% where natural turbidity is between 0 and 50 NTU, and 10% where natural turbidity is greater than 50 NTU.

1. For details, see Chapter 3 of the Basin Plans for the Lahontan RWQCB and the Los Angeles RWQCB.
2. Applies to the Santa Clara River between Lang Gauging Station and Bouquet Canyon Road bridge.
3. SAR – Sodium Adsorption Ratio.
4. For surface waters within the Project Area except Santa Clara River.

Under Section 303(d) of the CWA, states, territories, and authorized tribes are required to develop a list of water quality limited segments. These waters on the list do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that these jurisdictions establish priority rankings for water on the lists and develop action plans, called Total Maximum Daily Loads (TMDL), to improve water quality.

On July 25, 2003, the EPA gave final approval to California's 2002 Section 303(d) List of Water Quality Limited Segments. Section 303(d)-listed or impaired streams and completed TMDL requirements are identified as part of the resource inventory of the Project area. Impaired streams are considered sensitive resources in the routing of transmission lines and are protected from water quality impacts.

Table 5-4 presents a list of impaired water bodies in the Project area. All impaired waters in the Project area are within the jurisdiction of the Los Angeles RWQCB; no Section 303(d)-listed impaired water bodies within jurisdiction of the Lahontan RWQCB occur in the Project area.

TABLE 5-4. SECTION 303(D) LIST WATER QUALITY IMPAIRED WATERS REQUIRING TMDLS* IN THE PROJECT AREA

Name	Pollutants/Stressor	Potential Sources	Estimated Area Affected
Dry Canyon Creek	Fecal Coliform	Urban Runoff/Storm Sewers Natural Sources	3.9 miles
Elizabeth Lake	Eutrophic Organic Enrichment/Low Dissolved Oxygen pH Trash	Nonpoint Source	123 acres
Lake Hughes	Algae Eutrophic Fish Kills Odor Trash	Nonpoint Source	21 acres

Name	Pollutants/Stressor	Potential Sources	Estimated Area Affected
Munz Lake	Eutrophic Trash	Nonpoint Source	6.6 acres
Santa Clara River Reach 7 (Bouquet Canyon Road to above Lang Gauging Station)	Coliform Bacteria	Nonpoint/Point Source	21 miles

*2006 CWA Section 303(d) List of Water Quality Limited Segments Requiring TMDLs.

5.9.2. Groundwater Quality

Fremont Valley Groundwater Basin.

In the southwest part of the basin, groundwater is typically sodium bicarbonate or calcium-sodium sulfate in character, with total dissolved solids (TDS) ranging between 800 milligrams per liter (mg/L) to 1,000 mg/L. Portions of the basin are impaired by fluoride, sodium, and chloride (DWR 2003).

Antelope Valley Groundwater Basin.

Groundwater in the northern, southern, and central portions of the basin is typically calcium bicarbonate in nature, and is sodium bicarbonate or sodium sulfate in nature in the central portion. The eastern part of the basin is typically sodium-calcium bicarbonate in nature in the upper aquifer and sodium bicarbonate in nature in the lower aquifer. Throughout the basin, TDS range from 200 mg/L to 800 mg/L. Groundwater throughout the basin is impaired by high levels of boron and nitrate (DWR 2003).

Acton Valley Groundwater Basin.

Groundwater is generally calcium bicarbonate in nature, with TDS ranging from 424 mg/L to 712 mg/L. The northern portion or the basin is impaired by high concentrations of TDS, sulfate, and chloride. Some of these concentrations exceed drinking water standards (DWR 2003).

Santa Clara River Valley East Sub-basin.

Groundwater varies from calcium bicarbonate in the eastern part of the sub-basin to calcium sulfate in the west, and nitrate content decreases from east to west. In the East Sub-basin, TDS range from 550 mg/L to approximately 1,000 mg/L. Some parts of the sub-basin are impaired by nitrate, TDS, trichloroethylene, and ammonium perchlorate (DWR 2003).

San Fernando Valley Groundwater Basin.

Groundwater character varies from calcium sulfate-bicarbonate in the western portion of the basin to calcium bicarbonate in the eastern portion, with TDS ranging from 326 mg/L to 615 mg/L throughout. Groundwater in this basin is impaired by volatile organic compounds (VOCs) such as trichloroethylene, perchloroethylene, petroleum compounds, chloroform, nitrate, sulfate, and heavy metals (DWR 2003).

TABLE 5-5. WATER QUALITY IN PUBLIC SUPPLY WELLS

Constituent Group	Number of Wells Sampled	Number of Wells with a Concentration Above an MCL
Fremont Valley Groundwater Basin		
Inorganics - Primary	14	0
Radiological	11	0
Nitrates	15	0
Pesticides	13	0

Constituent Group	Number of Wells Sampled	Number of Wells with a Concentration Above an MCL
VOCs and SVOCs	12	0
Inorganics - Secondary	14	5
Antelope Valley Groundwater Basin		
Inorganics - Primary	214	25
Radiological	183	6
Nitrates	243	8
Pesticides	207	2
VOCs and SVOCs	207	4
Inorganics - Secondary	214	39
Acton Valley Groundwater Basin		
Inorganics - Primary	7	0
Radiological	0	0
Nitrates	14	1
Pesticides	4	0
VOCs and SVOCs	4	0
Inorganics - Secondary	7	0
Santa Clara River Valley East Sub-basin		
Inorganics - Primary	67	4
Radiological	56	2
Nitrates	74	2
Pesticides	66	4
VOCs and SVOCs	66	0
Inorganics - Secondary	67	7
San Fernando Valley Groundwater Basin		
Inorganics - Primary	129	6
Radiological	122	13
Nitrates	129	44
Pesticides	134	3
VOCs and SVOCs	134	90
Inorganics - Secondary	129	17

** California's Groundwater, Bulletin 118 (DWR 2003).*

6.0 IMPACT ASSESSMENT

Initial impact levels of each segment were evaluated by combining resource sensitivity and access level category (i.e., level of impact expected from ground disturbance). All known water resources within the study corridors of each segment were inventoried and evaluated to determine potential impacts resulting from the Project.

Impacts to inventoried water resources were evaluated considering the following factors:

1. Construction, operation, and maintenance related impacts
2. Occurrence of affected water resource areas
3. Water resource sensitivity levels
4. Access level category (level of impact expected from ground disturbance)
5. Mitigation measures to reduce initial impact levels

6.1 IMPACT MODEL

To determine the intensity of Project-related impacts, an impact model was developed for water resources. The impact assessment model combines resource sensitivity and access levels The combination of these assessment variables determined the level of impact (high, moderate, low). The results of the impact assessment are presented in detail in Section 7.0 of this report.

Once initial impacts levels were established for each segment, specific measures for mitigating or reducing predicted high- or moderate-level impacts were applied, as required by CEQA §15126.4 Residual impacts are the impacts remaining after applying mitigation measures.

6.2 RESOURCE SENSITIVITY

Resource sensitivity is the measure of the probable adverse effect that a resource would experience through direct or indirect impacts associated with construction, operation, and maintenance of the Project. Adverse effects to water resources were assessed using three major criteria: the susceptibility of the resource to the potential changes resulting from construction, operation, and maintenance activities; significance of the potential change on the resource; and occurrence or abundance of affected water resources within the study area. Also considered were hydrological capacity, accessory benefits (e.g., plant and wildlife habitat), and potential to affect engineering and design.

Determination of Potential Change
Changes are brought about by construction of the Project, the physical presence and operation of the Project facilities, and management and maintenance of the Project facilities. This potential for change is predicted by evaluating environmental conditions, the Project description, and implementation specifications.

Significance of Changes
The effect of potential changes on resources is described in levels of significance. The significance of any change relates to the immediate- and long-term effects that the change may have, either directly or indirectly, on the resource. Accordingly, a sensitivity value of maximum, moderate, or minimal was assigned to each resource to represent the potential level of significance.

6.2.1. Sensitivity Values

Sensitivity values are based on the function and value of the resource, and the level of impacts to that resource. For example, Palustrine Forested (PFO) wetlands are designated at a maximum sensitivity level because they provide high functional values and would be permanently impacted by clearing, ROW maintenance, and filling for access road construction.

A **maximum** sensitivity value was assigned to:

- areas with occurrences of perennial rivers or streams, including Lower Perennial Riverine (R2) wetlands
- Palustrine Emergent (PEM) or PFO wetlands
- Riparian Conservation Areas (RCAs)

A **moderate** sensitivity value was assigned to:

- 100-year floodplains
- intermittent rivers and streams, including Intermittent Riverine (R4) wetlands
- partially hydric soils
- Significant Ecological Areas (SEAs)

A **minimal** sensitivity was assigned to:

- Palustrine Unconsolidated Bottom (PUB) wetlands
- Aqueducts
- Wells and groundwater

Lands not associated with a water resource feature or indicator were not considered sensitive.

Access Levels and Ground Disturbance

The criteria for assessing the initial ground disturbance impacts to water resources are summarized in Table 6-1. Access level categories and resource sensitivity levels were the main factors used in estimating potential impact levels. Classifications for access level categories (e.g., ground disturbance), along with other Project ground disturbance estimates, are located in Appendix C.

TABLE 6-1. WATER RESOURCES IMPACTS BY ACCESS LEVEL CATEGORY

Resource		Access Level Categories						
		1	2	3	4	5	6	H
Perennial river or stream		Low	Low	Moderate	High	High	High	High
Intermittent river or stream		Low	Low	Moderate	Moderate	High	High	High
Aqueduct		Low	Low	Moderate	High	High	High	High
Wells		Low	Low	Low	Low	Low	Low	Low
Riparian habitat and RCAs		Low	Moderate	High	High	High	High	High
SEAs		Low	Low	Moderate	Moderate	High	High	High
NWI wetland	PEM	Low	Moderate	High	High	High	High	High
	PFO	Low	Moderate	High	High	High	High	High
	PUB	Low	Low	Moderate	Moderate	High	High	High
	R2	Low	Low	Moderate	High	High	High	High
	R4	Low	Low	Moderate	Moderate	High	High	High
Partially hydric soils		Low	Low	Moderate	Moderate	High	High	Moderate
100-year floodplain		Low	Low	Moderate	Moderate	High	High	Moderate

6.3 IMPACT LEVELS

Water resources impact determinations are based on significance criteria derived from CEQA Guidelines (Appendix G, Environmental Checklist Form, Section IX). Impacts are considered significant if the Project:

- Violates any water quality standards or waste discharge requirements, creates new sources of polluted runoff, or otherwise substantially degrades water quality.
- Substantially depletes groundwater supplies or interferes substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).
- Substantially alters the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.
- Substantially alters the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increases the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.
- Creates or contributes runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provides substantial additional sources of polluted runoff.
- Has a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- Places housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- Places within a 100-year flood hazard area structures which would impede or redirect flood flows.
- Exposes people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
- Results in or is subject to damage from inundation by seiche, tsunami, or mudflow.

6.4 IMPACT ASSESSMENT METHODOLOGY

6.4.1. 230 kV Transmission Line

To assess impacts to water resources associated with the new 230 kV transmission line, each water resource within 0.5 mile of the proposed centerline was mapped at a scale of 1:24,000 using GIS. Based on this map, location-specific analyses of temporary and permanent impacts could be made, and after considering the inherent sensitivity of perennial streams, intermittent streams, NWI wetlands, and other water resources that could be affected, a determination was made of whether high, moderate, or low impacts would result. This analysis was conducted throughout all Project segments.

For each of the initially proposed segments, the presence of streams, wetlands, aqueducts, wells, riparian habitat, RCAs and SEAs, hydric soils, and 100-year floodplains within one-half mile of the centerline was determined to the nearest tenth of a mile, and mile marker begin/end points were recorded. Permanent and temporary impacts to each resource (in acres) were determined based on the ground disturbance level applicable to the location evaluated. Permanent disturbance within the ground disturbance areas would be limited to the tower foundations and the footprint of new access roads. All other ground disturbance would be temporary.

All initial probable 230 kV component impacts were re-assessed in light of the effectiveness of General Practices (GPs) and Mitigation Measures (MMs) to reduce potential impacts. As summarized in Table 6-1, the initial 230 kV Project impacts were assessed with consideration to the sensitivity of each water resource type. After assigning initial ground disturbance impact levels for all water resources traversed by the 0.5-mile corridor for the centerline, GPs and MMs were considered and the degree to which they would reduce the initial impact was evaluated. GPs and MMs were then applied, as appropriate, to reduce the level of residual impacts to each water resource.

6.4.2. New 230 kV Circuit

In the Castaic Transmission Corridor, LADWP has two existing parallel double-circuit 230 kV towers. The northern towers hold the Castaic-Olive 230 kV Transmission Line and the second position is vacant. LADWP proposes the addition of approximately 12 miles of a new 230 kV transmission circuit onto existing Castaic – Olive 230 kV Transmission Line structures (towers 1-1 through 12-1).

Water resources within one half mile of towers 1-1 through 12-1 of the existing Castaic-Olive 230 kV transmission line were inventoried to the nearest tenth of a mile and mile marker begin/end points were recorded. This information was used to determine permanent impacts that would result from upgrading the existing access and spur roads and clearing of the right-of-way. Temporary impacts would occur where equipment staging, line work, or construction traffic access would be needed.

6.4.3. Reconductoring

As part of the BRRTP, LADWP is proposing to upgrade the existing BR-RIN line from the Barren Ridge Switching Station to the Rinaldi Substation with larger-capacity conductors. Permanent impacts would occur from rehabilitation of the existing access and spur roads, and clearing of the right-of-way. By utilizing the existing structures and ROW, the Project would minimize permanent impacts while allowing additional transmission capacity along the corridor. Temporary impacts would occur where equipment staging, line work, or construction traffic access would be needed. Upgrading the existing BR-RIN would involve approximately 13 miles of USFS lands and four miles of BLM lands.

6.4.4. New Haskell Canyon Switching Station

Ground disturbance at the Haskell Canyon Switching Station site would lead to permanent impacts within the proposed switching site fence line and associated new access roads. The station would require an area of approximately 400 feet by 600 feet to accommodate the necessary equipment such as steel support structures, circuit breakers, disconnect switches, and associated equipment, and a relay house and control house containing control and protective relaying equipment. Temporary impacts within the area would occur where equipment staging, line work, or construction traffic access would be needed.

6.4.5. Expansion of Barren Ridge Switching Station

Expansion of the Barren Ridge Switching Station site would lead to permanent impacts within the proposed site fence line. LADWP proposes expansion of the existing Barren Ridge Switching Station to the east side by 235 feet by 500 feet for a total station size of 485 feet by 500 feet (approximately 5.6 acres). Existing access roads will be used and permanent impacts will be restricted to the site expansion. Temporary impacts within the area would occur where equipment staging, line work, or construction access would be needed.

6.5 IMPACTS AND MITIGATION PLANNING

Potential impacts to water resources include temporary (construction-related) impacts and long-term (permanent) impacts. When evaluating potential impacts to water resources, it was assumed that the Project would comply with all applicable federal, state, and local regulatory requirements that protect surface water and groundwater.

The GPs described in Table 6-2 below are measures that would be included in the Project description and implemented as part of the proposed Project. Impact analysis assumed that all GPs will be implemented as defined.

The USFS, Pacific Southwest Region has established water quality protection BMPs and BMP evaluation protocols for use on Forest lands. The GPs and Mitigation Measures described in this section have been developed with Forest Service BMPs in mind, where applicable. For example, GP-5 and GP-9 are comparable to Forest Service BMPs Practice 2-12, Servicing and Refueling of Equipment, and Practice 7-4, Forest and Hazardous Spill Prevention Control and Countermeasure (SPCC) Plan (USFS 2000).

The specifically recommended Mitigation Measures described in Table 6-3 below would be used on a site-specific basis to minimize Project-related impacts if it is determined that GPs would not fully mitigate the impacts for which they are presented.

TABLE 6-2. GENERAL PRACTICES

Plans	
GP-1	**Plan of Development & Construction, Operation and Maintenance Plans.** In consultation with the Forest Service and BLM Authorizing Officers prior to construction, LADWP shall develop a Construction, Operation and Maintenance Plan (COM Plan) with the Forest Service and Plan of Development (POD) with BLM. These plans shall be attached to and become a part of the Special Use and Right-of-Way Authorizations. The COM Plan and POD shall include, at a minimum, road maintenance specifications, vegetation treatment and rehabilitation specifications, and conditions on maintenance and replacement of improvements. The agencies may combine the POD and COM plans into a single document for the project.
GP-3	**Hazardous Materials/Waste Management Plan.** A project-specific hazardous materials management and hazardous waste management program will be developed prior to initiation of the project. The program will outline proper hazardous materials use, storage and disposal requirements as well as hazardous waste management procedures. The program will identify types of hazardous materials to be used during the project and the types of wastes that will be generated. All project personnel will be provided with project-specific training. This program will be developed to ensure that all hazardous materials and wastes were handled in a safe and environmentally sound manner. Hazardous wastes will be handled and disposed of according to applicable rules and regulations. Employees handling wastes will receive hazardous materials training and shall be trained in hazardous waste procedures, spill contingencies, waste minimization procedures and Treatment, Storage and Disposal Facility (TSDF) training in accordance with OSHA Hazard Communication Standard and 22 CCR. If degraded soil or groundwater is encountered during excavation (e.g., there is an obvious sheen, odor, or unnatural color to the soil or groundwater), it shall be excavated, tested, and disposed of in accordance with state hazardous waste disposal requirements. The Plan shall also include procedures detailing emergency responses to releases of hazardous materials. It will prescribe hazardous materials handling procedures for reducing the potential for a spill during construction, and will include an emergency response program to ensure quick and safe cleanup of accidental spills. All hazardous materials spills or threatened release, including petroleum products such as gasoline, diesel, and hydraulic fluid, regardless of the quantity spilled, will be immediately reported to the appropriate agency as outlined in the Plan if the spill has entered a navigable water, stream, lake, wetland, or storm drain, if the spill impacted any sensitive area including conservation areas and wildlife preserves, or if the spill caused injury to a person or threatens injury to public health. All construction personnel, including environmental monitors, will be aware of state and federal emergency response reporting guidelines.
GP-5	**Stormwater Pollution Prevention Plan.** A project-specific Construction Stormwater Pollution Prevention Plan (SWPPP) will be prepared and implemented prior to the start of construction. The SWPPP will utilize Best Management Practices (BMPs) to address the storage and handling of hazardous materials and sediment runoff during construction activities.

GP-6	**Spill Prevention, Countermeasure, and Control Plan.** LADWP will prepare or update existing Spill Prevention, Countermeasure, and Control Plan (SPCC Plan) for proposed and/or expanded switching stations if necessary or required by EPA guidelines. The plans will include engineered and operational methods for preventing, containing, and controlling potential fluid releases, and provisions for quick and safe cleanup.
GP-7	**Soil Management Plan.** A Soil Management Plan will be developed and implemented for construction of the proposed Project. The objective of the Soil Management Plan is to provide guidance for the proper handling, onsite management, and disposal of impacted soil that might be encountered during construction activities. The plan will include practices that are consistent with California Title 8, Occupational Safety and Health Administration (Cal-OSHA) regulations, as well as appropriate remediation standards that are protective of the planned use. The Plan will provide guidelines for identification of impacted soil, assessing impacted soil, soil excavation, impacted soil storage, verification sampling, and impacted soil characterization and disposal. In the event that potentially contaminated soils are encountered within the footprint of construction, soils will be tested and stockpiled. The appropriate Certified Unified Program Agency (CUPA) will determine whether further assessment is warranted.
Design	
GP-11	Project features will be placed so as to avoid sensitive features including, but not limited to, riparian areas, water courses, and cultural sites, and/or to allow conductors to clearly span the features, within limits of standard tower design. This will minimize the amount of sensitive features disturbed and/or reduce visual contrast.
GP-12	Drainage control features will be installed, as appropriate, to minimize the amount of stormwater flow from areas of active construction. Details would be described in the SWPPP.
Construction Vehicles/Equipment	
GP-15	All trucks hauling soils or other loose materials shall be covered, or maintain at least two feet of freeboard (distance between the material and the top of the truck).
GP-16	Where visible soil material is carried onto adjacent public streets, the affected streets shall be cleaned daily with water sweepers.
GP-17	All vehicles and equipment operating within 100 feet of an active stream will be inspected daily to ensure they are free of any leaks of fuel, cooling, or lubricating fluids.
GP-18	All construction vehicles shall maintain a hazardous materials spill kit, which shall include absorbent materials, tarps, small storage containers or waterproof bags, and latex gloves. Field personnel shall be made aware of these kits and instructed on how to use them.
GP-19	Refueling, or addition or changing of oil and other fluids for equipment and heavy machinery shall be performed only at approved staging and construction yards. Staging and construction yards will be located on upland sites and spill containment measures will be used to minimize risk of spill or drainage into waterways. Oil and other fluids will be disposed of as required by California law. Emergency refueling, or emergency addition or changing of oil or other fluids shall not be performed within 500 feet of natural stream channels or wetlands.
GP-20	Helicopters utilized for construction will be refueled at helicopter staging areas or local airports. Procedures will include the use of drop cloths made of plastic and drip pans and trays to be placed under refilling areas to ensure that chemicals do not come into contact with the ground. Refueling areas will be located in designated areas where absorbent pads and trays are available.
Access Roads	
GP-23	The alignment of any new access roads or overland routes shall follow the designated area's landform contours where possible, providing that such alignment does not additionally impact resource values.
GP-24	To the extent practical, any re-grading of access roads shall be the minimum necessary to provide safe access of construction equipment, and erosion control measures.
GP-25	Construction vehicles shall use paved roads to access the construction site when available.
GP-33	In areas where soils and vegetation are particularly sensitive to disturbance, existing access roads would be repaired only in areas where they are otherwise impassable or unsafe.

Construction Areas	
GP-34	Construction activities shall be limited to the designated right-of-way and approved access and work areas as identified in the ROD and POD. Any deviations from the approved areas must be cleared with the jurisdictional agency and/or landowner.
GP-35	Grading areas shall be clearly marked and no equipment or vehicles shall disturb slopes or drainages outside of the grading area.
GP-36	No paint or permanent discoloring agents will be applied to rocks or vegetation to indicate survey or construction activity limits.
GP-37	In construction areas (e.g., marshalling yards, tower sites, spur roads from existing access roads) where ground disturbance is significant or where recontouring is required, surface restoration shall occur as required by the landowner or land management agency. The method of restoration will normally consist of returning disturbed areas back to their natural contour, reseeding, installing cross drains for erosion control as necessary, placing water bars in the road as necessary, and filling ditches.
GP-38	Soil excavated from construction activities shall not be left at work areas where the slopes exceed 10 percent or where the work area is within 100 feet of a natural stream or waterbody (receiving water). In these situations, loose soil shall be used elsewhere within the immediate area or stockpiled at the staging area. Stockpiled soil shall be managed as required by the SWPPP. No stockpiling or spreading of soil or other materials shall occur within stream channels.
GP-39	During grading or excavation work for the Project, the contractor shall observe the exposed soil for visual evidence of contamination. If visual contamination indicators are observed during construction, the contractor shall stop work until the material is properly characterized and appropriate measures are taken to protect human health and the environment. The contractor shall document the exact location of the contamination and shall immediately notify a designated Environmental Monitor and propose actions for addressing the contamination in accordance with the Soil Management Plan.
GP-40	Existing watering facilities (e.g., tanks, developed springs, water lines, wells, etc.) will be repaired or replaced, if they are damaged or destroyed by construction activities, to their pre-disturbed condition as required by the landowner or land management agency.
GP-41	Allow natural vegetation to reoccur on temporarily disturbed areas following the completion of construction.
GP-43	Every effort will be made to minimize vegetation removal and permanent loss at construction sites. Native vegetation will be flagged for protection or stockpiled for recontouring use at the discretion of the Biological Monitor and the Construction Supervisor.
GP-44	In construction areas where recontouring is not required, vegetation will be left in place wherever possible and the original contour will be maintained to avoid excessive root damage and allow for resprouting. Disturbance will be limited to overland driving where feasible to minimize changes in the original contours.
GP-45	Use of heavy equipment within a flowing channel will be avoided if possible; however, should it be necessary, the Environmental Monitor will be notified prior to initiation of construction activities to allow adequate time for site visits and surveys, if necessary.
GP-46	Asphalt or cement equipment will not be rinsed in, nor excess products deposited into any stream or other waterway. Asphalt or concrete effluent will not be allowed to enter into stream or RCA. Effluent will be removed from standing water and prevented from entering a waterway.
GP-47	Fill material, including brush, loose soils, and other similar debris will not be deposited within a stream channel or on a stream bank.

Surveys/Monitoring	
GP-48	**Biological Monitor.** For areas identified as environmentally sensitive, such as streams, wetlands, riparian areas, and other environmentally sensitive areas, a biological monitor shall be present during ground disturbing construction activities. The qualified biologist shall conduct monitoring for any area subject to disturbance from construction activities that may impact biological resources. The biological monitor's duties include minimizing impacts to special-status species, native vegetation, wildlife habitat, and unique resources, as well as to identify potential issues or impacts to biological resources and report those to the authorized biologist. Where appropriate, the monitor will flag the boundaries of biologically sensitive areas and monitor any construction activities in these areas to ensure that ground disturbance activities and impacts occur within designated limits.
GP-49	**Worker Environmental Awareness Program.** A Worker Environmental Awareness Program (WEAP) will be implemented to educate all construction personnel of the area's environmental conditions and the environmental protection measures that must be adhered to. An environmental training program will be established to communicate environmental concerns and appropriate work practices, including spill prevention, emergency response measures, protection of biological and cultural resources, and proper Best Management Practice (BMP) implementation, to all construction and maintenance personnel.
Coordination/Permits	
GP-50	Prior to construction, LADWP shall consult with all federal, state, and local agencies, including local agency consortiums, having jurisdiction over lands affected by the proposed Project's ROW and ancillary facilities to ensure that no permanent restrictions or preclusions of their land management practices occur.
GP-53	Incorporate riparian area avoidance and permit measures. The following actions and all permit conditions detailed within the Nationwide 12 permit and RWQCB 401 water quality certification (subject to separate approval) would be implemented by the construction manager and environmental compliance monitor(s). Before construction, qualified resource specialists would stake and flag or fence exclusion zones around all identified riparian woodlands. Such exclusion zones would include a 10-foot buffer to preclude sediment intrusion into the riparian areas. Earth-moving activities would be restricted from these zones, although essential vehicle operation and foot travel would be permitted on existing roads, bridges, and crossings. All other construction activities, vehicle operation, material and equipment storage, and other surface-disturbing activities would be prohibited within the exclusion zone. In areas where riparian habitats are unavoidable, the construction manager in consultation with the lead environmental compliance inspector would narrow the width of the centerline to the maximum extent allowable. New spur roads and existing access road improvements would be constructed and implemented using methodology that preserves existing hydrology. Tower pad clearance would be minimized to the maximum extent allowable. All temporarily disturbed riparian areas that would not be utilized for future routine operation and maintenance activities would be restored to ensure no net loss of habitat functions and values. Following construction activities, the areas would be restored as soon as practicable.
GP-54	Construction crews will avoid impacting the streambeds and banks of any streams along the route to the extent feasible. When construction or maintenance work affects the bed, bank or margins of a stream under CDFG jurisdiction, LADWP will notify CDFG as required under Fish and Game Code Section 1602, which may include securing a Streambed Alteration Agreement.

TABLE 6-3. SPECIFICALLY RECOMMENDED MITIGATION MEASURES.

Measure	Description
HYD – 1	For Project construction and operation, off-road or cross-country access routes shall be preferred, as feasible, over the construction of new access roads. Such access roads would be approved in advance by the Environmental Monitor and the Project Manager and be flagged with easily seen markers. Any new access roads shall be constructed by mowing or crushing, rather than blading, wherever possible. Mowing for temporary or permanent access roads shall be limited to a 12 foot wide area on straight portions of the road (slightly wider on turns), and the mowing height shall be no less than 4 inches from finished grade. Existing crossings shall be utilized at perennial streams, wetlands, and irrigation channels to the extent feasible. New access roads not required for ongoing maintenance shall be permanently closed after construction using the most effective and least environmentally damaging methods appropriate to that specific area, with concurrence of the landowner or land manager (e.g., stockpiling and replacing topsoil, or rock replacement).
HYD – 2	Roads would be built as near as possible to right angles to the streams and washes, if feasible. Culverts would be installed where necessary. All construction and maintenance activities shall be conducted in a manner that would minimize disturbance to vegetation, drainage channels, and intermittent or perennial stream banks. In addition, road construction would include dust-control measures during construction in sensitive areas. All existing roads would be left in a condition equal to or better than their condition prior to the construction of the transmission line.
HYD – 3	New impervious areas associated with temporary construction would be restored to existing conditions, including but not limited to revegetation, to the extent possible after completion of Project construction.
HYD – 4	Stormwater drainage inside switching station walls would be designed to minimize erosion and increase sediment control. Internal runoff would be released from the switching station by means of surface drainage structures designed to filter contaminants from water flow. Drainage from the property would be collected and controlled by surface improvements, as detailed in the SWPPP.
HYD – 5	Structures and new access roads placed within a 100-year floodplain would be engineered so that they do not impede or redirect flood flows or raise the flood elevation.
HYD – 6	Structures located within the 100-year floodplain of rivers and streams would be designed to minimize the capture of flood debris to prevent flow obstructions and scouring during flood flows.
HYD – 7	Structures located adjacent to or downslope of lakes and reservoirs would be designed to minimize damage from inundation of a seismic seiche.
HELICOPTER	Helicopter Mitigation shall be implemented in steep areas of the Angeles National Forest where access is limited. During final design of the Project, areas other than those currently identified on Alternatives 1 and 2a may potentially require helicopter construction of the towers. This determination would generally be made where tower sites have no existing access roads within 300 feet and slopes are greater than 25 percent. Final identification of these tower sites would be determined and agreed upon by USFS, BLM and LADWP.

6.5.1. Types of Impacts

Below are descriptions of the criteria in which an impact would be determined significant.

Construction-related Impacts

Violation of water quality standards, creation of new sources of polluted runoff, or other degradation of water quality.

Temporary impacts to water quality could result from stormwater runoff during construction of the Project. Construction of the transmission line and the new Haskell Canyon Switching Station, expansion of the Barren Ridge Switching Station, and reconductoring of the existing BR-RIN line would require ground-disturbing activities, including clearing and grading for structure installation work areas, and access construction. Disturbed soils accelerate erosion and increase sediment in stormwater runoff to receiving waters, causing increased turbidity and sedimentation. Dewatering during construction activities could potentially release contaminated groundwater to surface water channels or drainage features. Additionally, fuel, oil, and other fluids used in construction vehicles, equipment, and heavy machinery could enter streams and contaminate water. Potential impacts to water quality from sedimentation, turbidity, and oil/chemical contamination would be less than significant. Application of GPs such as GP-5, GP-7, GP-12, and GP-19, and implementation of HYD-1 would further reduce these potential impacts.

HYD-1 would minimize the potential for erosion, sedimentation, and increased turbidity by restricting where roads may be sited, minimize the use of blading for new road construction, and requiring the use of existing stream crossings, where feasible.

Substantial alteration of existing drainage patterns resulting in substantial erosion or siltation on- or off-site.

Construction of the transmission line and the new Haskell Canyon Switching Station, expansion of the Barren Ridge Switching Station, and reconductoring of the existing BR-RIN line would require ground-disturbing activities, including clearing and grading for structure installation work areas, and access construction. This ground disturbance could potentially alter drainage patterns within the work areas and result in soil erosion leading to increased sedimentation. Potential impacts resulting from substantial drainage pattern alteration would be significant without mitigation. Implementation of mitigation measures HYD-1, HYD-2, and HELICOPTER would reduce potential impacts resulting from substantial drainage pattern alteration to less than significant.

Substantial alteration of existing drainage patterns, including through the alteration of the course of a stream or river, or substantial increase of the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

Construction of the transmission line and the new Haskell Canyon Switching Station, expansion of the Barren Ridge Switching Station, and reconductoring of the existing BR-RIN line would require ground-disturbing activities, including clearing and grading for structure installation work areas, and access construction. The proposed transmission line would cross numerous streams and drainages, including the Santa Clara River. Ground disturbance related to construction of the proposed transmission line could potentially alter drainage patterns within the work areas and result in an increase of the rate or amount of surface water runoff. Potential impacts resulting from flooding through alteration of existing drainage patterns would be significant without mitigation. Implementation of mitigation measures HYD-1, HYD-2, and HELICOPTER would reduce potential impacts resulting from runoff or flooding through alteration of existing drainage patterns to less than significant.

HYD-2 reduces potential impacts to existing drainage patterns of streams and washes by requiring new permanent or temporary roads to be constructed in a manner that would minimize disturbance to vegetation, drainage channels, and intermittent or perennial stream banks.

HELICOPTER mitigation would, where implemented, reduce the need for access roads to be constructed on very steep slopes. This would minimize alteration of drainage patterns, as well as related erosion, siltation, and flooding.

Creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems or contribution of substantial additional sources of polluted runoff.

Construction of the transmission line and the new Haskell Canyon Switching Station, expansion of the Barren Ridge Switching Station, and reconductoring of the existing BR-RIN line would require ground-disturbing activities, including clearing and grading for structure installation work areas, and access construction. Creation of new permanent access and spur roads or widening of existing roads would potentially create additional sources of runoff. Likewise, grading activities for construction of the new Haskell Canyon Switching Station and extension of the existing Barren Ridge Switching Station would potentially contribute additional sources of polluted runoff. These potential impacts would be significant without mitigation.

Potential impacts related to contribution of substantial additional sources of polluted runoff would be less than significant. Application of GPs such as GP-5 would further reduce these potential impacts.

Have substantial adverse effect on federal protected wetlands as defined by Section 404 of the Clean Water Act through direct removal, filling, hydrological interruption, or other means.

Construction of the transmission line and the new Haskell Canyon Switching Station, expansion of the Barren Ridge Switching Station, and reconductoring of the existing BR-RIN line would require ground-disturbing activities, including clearing and grading for structure installation work areas, and access construction. Construction of the new Haskell Canyon Switching Station and expansion of the existing Barren Ridge Switching Station may also require importation of soil for filling activities. These activities could impact wetlands by removing wetland vegetation and soils, or by filling wetlands with upland soils and destroying hydrological connectivity.

Potential impacts to federal protected wetlands would be less than significant. Application of GPs such as GP-49 would further reduce these potential impacts.

Operation- and Maintenance-related Impacts

Creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, or contribution of substantial additional sources of polluted runoff.

Construction of the new Haskell Canyon Switching Station and expansion of the existing Barren Ridge Switching Station would create new impermeable surfaces with the potential to increase the rate of stormwater runoff and contribute additional sources of polluted runoff. Maintenance of access roads and structure pads (e.g., gravelling, vegetation clearance) would also contribute additional sources of stormwater runoff. Blading and other methods of vegetation removal for clearance of roads and construction areas would decrease the ability of the soil to absorb water and increase stormwater runoff from disturbed areas. Increased runoff could result in increased erosion, and siltation and flooding downstream of the disturbed areas. Implementation of mitigation measures HYD-3 and HYD-4 would reduce these potential impacts to less than significant.

HYD-3: New impervious areas associated with temporary construction will be restored to existing conditions, including but not limited to revegetation, to the extent possible after completion of Project construction.

HYD-4: Stormwater drainage inside switching station will be designed to minimize erosion and increase sediment control, as detailed in the SWPPP.

Placement of structures within a 100-year flood hazard area which would impede or redirect flood flows.

Construction of the new 230 kV transmission line would result in the placement of tower structures within 100-year flood hazard areas. Structures placed in these areas could potentially impede flood flows or redirect flood flows to areas not currently within a flood hazard area by raising the base flood elevation level. Implementation of mitigation measures HYD-5 and HYD-6 would reduce potential impacts resulting from impeding or redirecting flood flows to less than significant.

HYD-5: Structures and new access roads placed within a 100-year floodplain will be engineered so that they do not impede or redirect flood flows or raise the flood elevation.

HYD-6: Structures located within the 100-year floodplain of rivers and streams will be designed to minimize the capture of flood debris to prevent flow obstructions and scouring during flood flows.

Result in or be subject to damage from inundation by seiche, tsunami, or mudflow.

Segments of the new 230 kV transmission line and a portion of the existing BR-RIN line would be located adjacent to bodies of water capable of producing a seiche during or following a seismic event, and would potentially be subject to damage from inundation.

Implementation of mitigation measure HYD-7 would reduce potential impacts resulting from damage or destruction of tubular steel pole (TSP) or lattice structures during a seismic seiche to less than significant.

HYD-7: Structures located adjacent to lakes and reservoirs will be designed to minimize damage resulting from inundation from a seismic seiche.

Other Potential Impacts

Potential Project-related impacts resulting from construction, operation, and maintenance were assessed with regards to the following significance criteria. As discussed below, the Project was determined to have no impact with regards to these criteria, which will not be discussed hereafter.

Substantial depletion of groundwater supplies or interference with groundwater recharge resulting in a net deficit of aquifer volume or lowering of level of the local groundwater table.

No Impact. Construction of steel lattice structures for the new transmission line would require concrete foundations with footings averaging a depth of 20 feet, depending on soil conditions, and construction of TSPs would require foundations from 15 feet to 30 feet deep, depending on soil conditions.

Aquifers in the BRRTP area are generally unconfined, and depths of water-bearing formations exceed the distance required for foundations and footings. While there is potential for groundwater to be encountered during auguring activities along certain segments, dewatering activities are unlikely to deplete groundwater supplies. Construction, operation, and maintenance of the Project will not interfere with groundwater recharge or otherwise lower the levels of local groundwater tables.

Placement of housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.

No Impact. Construction of the transmission line and the new Haskell Canyon Switching Station, expansion of the Barren Ridge Switching Station, and reconductoring of the existing BR-RIN line does not involve the placement of housing within a 100-year flood hazard area.

Exposure of people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.

No Impact. Although segments of the new 230 kV transmission line would be located adjacent to reservoirs, structures for the transmission line would be sited so that the line would either span the area of hazard (e.g., Castaic Lake), or be placed on a ridge above the dam (e.g., Bouquet Reservoir). Construction and operation of the Project would not cause or increase the likelihood of failure of a levee or dam that could result in flooding. As such, the Project would not expose people or structures to a significant risk of loss, injury, or death involving flooding resulting from the failure of a levee or dam.

7.0 IMPACT RESULTS

Project-related impacts were initially assessed without reference to GPs or MMs. Once initial impacts were determined using the methodology described in Section 6.0, GPs and MMs were recommended and applied to each impact to minimize potential impacts resulting from construction, operation, and maintenance of the BRRTP. A detailed table of impacts to water resources can be found in Appendix A.

7.1 SEGMENT A

Segment A is approximately 13 miles long, beginning at LADWPs Barren Ridge Switching Station near Pine Tree Canyon and travelling southeast near the base of the Barren Ridge and the Tehachapi Mountains toward the unincorporated community of Mojave.

Segment A crosses multiple intermittent streams, including Pine Tree Canyon Creek at mile marker 0.6, and Cache Creek at mile marker 10.5. A 100-year floodplain associated with Pine Tree Canyon is crossed from mile marker 0.6 to mile marker 1.1, and a second 100-year floodplain associated with Cache Creek is crossed from mile marker 9.8 to mile marker 10.6. Existing roads would be utilized for construction, operation, and maintenance activities (access level 1). Ground disturbance within Segment A would be limited to crushing or blading of vegetation as required for work areas and construction of foundations, footings, and tower structures.

Construction of Segment A would result in a temporary ground disturbance of 86.5 acres and a permanent ground disturbance of 10.6 acres.

Potential impacts resulting from construction, operation, and maintenance activities within Segment A include impacts to water quality, creation of erosion or siltation on- or off-site, increase in the rate or amount of surface water runoff resulting in flooding, creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, contribution of additional sources of polluted runoff, and the placement of tower structures within a 100-year floodplain.

Given the relatively low level of ground disturbance and the low angle of slope along the length of Segment A, these impacts were determined to be low. Implementation of MMs presented in Table 7-1 would further reduce impacts to a negligible level (see Appendix A for details on impact locations and applicable Mitigation Measures).

TABLE 7-1. MITIGATION MEASURES APPLICABLE TO SEGMENT A

Impact	Mitigation Measures
Violation of water quality standards, creation of new sources of polluted runoff, or other degradation of water quality.	HYD – 1
Substantial alteration of existing drainage patterns resulting in substantial erosion or siltation on- or off-site.	HYD-1, HYD-2
Substantial alteration of existing drainage patterns or substantial increase of the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.	HYD-1, HYD-2
Creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, or contribution of substantial sources of polluted runoff.	HYD-3, HYD-4
Placement of structures within a 100-year flood hazard area which would impede or redirect flood flows.	HYD-5, HYD-6

7.2 SEGMENT B

Segment B is approximately 27 miles long. It begins just north of the unincorporated community of Mojave and runs south to the Antelope Valley California Poppy Reserve. Segment B parallels LADWPs 230 kV BR-RIN transmission line and 500 kV PDCI transmission line. Three multi-circuit towers are proposed in the Willow Springs area.

Segment B crosses multiple unnamed intermittent streams flowing out of the Tehachapi Mountains, and three 100-year floodplains. The first floodplain is crossed from mile marker 0.0 to 5.2. The second 100-year floodplain is crossed from mile marker 11.4 to 20.4. Both floodplains are in the Antelope Valley plain, and are associated with the many intermittent streams that flow out of the Tehachapi Mountains. The third floodplain is crossed from mile marker 23.8 to 24.2. This floodplain is associated with intermittent streams that flow out of Broad Canyon and the Fairmont and Antelope Buttes. Partially hydric soils have been mapped within Segment B from mile marker 15.7 to 24.7, mile marker 24.8 to 25.8, and mile marker 26.2 to 26.4.

Existing roads would be utilized for construction, operation, and maintenance activities within Segment B (access level 1). Ground disturbance within Segment B would be limited to crushing or blading of vegetation as required for work areas and construction of foundations, footings, and tower structures.

Construction of Segment B would result in a temporary ground disturbance of 172.3 acres and a permanent ground disturbance of 21.2 acres.

Potential impacts resulting from construction, operation, and maintenance activities within Segment B include impacts to water quality, creation of erosion or siltation on- or off-site, increase in the rate or amount of surface water runoff resulting in flooding, creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, contribution of additional sources of polluted runoff, and the placement of tower structures within a 100-year floodplain.

Given the relatively low level of ground disturbance and the low angle of slope along the length of Segment B, these impacts were determined to be low. Implementation of MMs presented in Table 7-2 would further reduce impacts to a negligible level (see Appendix A for details on impact locations and applicable Mitigation Measures).

TABLE 7-2. MITIGATION MEASURES APPLICABLE TO SEGMENT B

Impact	Mitigation Measures
Violation of water quality standards, creation of new sources of polluted runoff, or other degradation of water quality.	HYD – 1
Substantial alteration of existing drainage patterns resulting in substantial erosion or siltation on- or off-site.	HYD-1, HYD-2
Substantial alteration of existing drainage patterns or substantial increase of the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.	HYD-1, HYD-2
Creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, or contribution of substantial sources of polluted runoff.	HYD-3, HYD-4
Placement of structures within a 100-year flood hazard area which would impede or redirect flood flows.	HYD-5, HYD-6

7.3 SEGMENT C

Segment C is approximately 22 miles long, beginning just north of the unincorporated community of Mojave (at the junction of Segments A and B) and travelling southwest toward the 230 kV Magunden –

Vincent Transmission Line owned by SCE. Segment C parallels the First Los Angeles Aqueduct for approximately 18 miles, from mile marker 0.0 to 18.1, just north of Cottonwood Creek.

Segment C crosses multiple perennial and intermittent streams that flow out of the Tehachapi Mountains, including Oak Creek at mile marker 8.9 and Cottonwood Creek at mile marker 20.2. Segment C crosses two broad 100-year floodplains; the first floodplain is crossed from mile marker 0.0 to 5.8, and the second is crossed from mile marker 8.6 to 20.6. Both floodplains are associated with perennial and intermittent streams flowing out of the Tehachapi Mountains, and are the same broad floodplains crossed by Segment C. Three areas of partially hydric soils are mapped within Segment C. The first area is mapped from mile marker 18.5 to 19.7, the second from mile marker 20.1 to 20.4, and the third from mile marker 20.6 to 20.8.

Existing roads would be utilized for construction and maintenance along the greater portion of Segment C; however, many of these existing roads may require widening, vegetation clearing, or additional maintenance (access level 2), resulting in approximately 1.0 to 1.5 acres of permanent disturbance per mile of transmission line. Approximately 4.4 miles of new roads would be constructed within Segment C, resulting in an estimated 1.9 to 4.8 acres of permanent disturbance per mile of transmission line where new roads are constructed (access level 3). Ground disturbance within Segment C would also include crushing or blading of vegetation as required for work areas and construction of foundations, footings, and tower structures.

Construction of Segment C would result in a temporary ground disturbance of 141.1 acres, and permanent ground disturbance would range from 38.3 acres to 72.1 acres (average permanent ground disturbance 55.2 acres).

Potential impacts resulting from construction, operation, and maintenance activities within Segment C include impacts to water quality, creation of erosion or siltation on- or off-site, increase in the rate or amount of surface water runoff resulting in flooding, creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, contribution of additional sources of polluted runoff, and the placement of tower structures within a 100-year floodplain.

Without mitigation, impacts resulting from construction of new roads would be moderate; however, implementation of the MMs presented in Table 7-3 below would minimize these impacts to a low level. Elsewhere within Segment C, ground disturbance resulting from upgrading existing roads and from work areas required for construction would result in low impacts without mitigation. Implementation of MMs would minimize these impacts to a negligible level (see Appendix A for details on impact locations and applicable Mitigation Measures).

TABLE 7-3. MITIGATION MEASURES APPLICABLE TO SEGMENT C

Impact	Mitigation Measures
Violation of water quality standards, creation of new sources of polluted runoff, or other degradation of water quality.	HYD – 1
Substantial alteration of existing drainage patterns resulting in substantial erosion or siltation on- or off-site.	HYD-1, HYD-2
Substantial alteration of existing drainage patterns or substantial increase of the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.	HYD-1, HYD-2
Creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, or contribution of substantial sources of polluted runoff.	HYD-3, HYD-4
Placement of structures within a 100-year flood hazard area which would impede or redirect flood flows.	HYD-5, HYD-6

7.4 SEGMENT D

Segment D is approximately 48 miles long. It generally parallels the Los Angeles Aqueduct beginning just south of Cottonwood Creek and travelling south to the California Aqueduct, where it turns west to the Interstate 5 utility corridor. From there, Segment D heads southeast along the existing Castaic – Rinaldi corridor owned by LADWP to the proposed Haskell Canyon Switching Station.

Segment D crosses multiple perennial and intermittent streams, including Cow Spring Canyon Creek, Horsecamp Canyon Creek, Tentrock Canyon Creek, West Fork Liebre Gulch, Liebre Gulch, Trough Canyon Creek, Posey Canyon Creek, Big Oak Flats, Canton Canyon Creek, Grasshopper Canyon Creek, Eltter Canyon Creek, Charlie Canyon Creek, San Francisquito Canyon Creek, and Dry Canyon Creek, all of which flow out of the San Gabriel Mountains. Segment D also crosses multiple unnamed perennial and intermittent streams that flow from both the Tehachapi Mountains and the San Gabriel Mountains.

From mile marker 10.6 to 11.6, Segment D crosses a 100-year floodplain associated with streams flowing out of the Tehachapi Mountains. Another 100-year floodplain, associated with flows from Pine Canyon, is crossed between mile marker 13.6 and 13.9. From mile marker 41.6 to 41.8, Segment D crosses the 100-year floodplain associated with the spillway of Castaic Lake Dam, and the 100-year floodplain associated with San Francisquito Creek is crossed from mile marker 46.1 to 46.3.

Partially hydric soils are mapped in multiple scattered locations within Segment D. The largest mapped units of partially hydric soils are crossed between mile marker 20.4 and 23.3, and between mile marker 37.2 and 43.3.

Segment D generally parallels the Los Angeles Aqueduct as far as West Avenue G, crossing a flume at mile marker 10.8, then crossing the aqueduct at mile marker 9.4. At Avenue G, Segment D turns west and parallels the California Aqueduct flume from the Tehachapi Forebay, crossing the flume at mile marker 13.6. Segment D crosses the West Branch California Aqueduct tunnel at mile marker 33.5, and the Los Angeles Aqueduct tunnel at mile marker 46.9.

One groundwater well is crossed by Segment D. This well, #08N16W04N001S, is located under the proposed centerline at mile marker 11.1. DWR records for this well do not go beyond 1962, and the current status of this well is unknown.

As Segment D leaves the Antelope Valley it crosses the San Andreas Rift Zone SEA. This SEA would be spanned from mile marker 14.7 to 22.5. Toward the end point of Segment D, from mile marker 46.1 to 46.4, Segment D crosses the Santa Clara River SEA. As Segment D crosses into the Angeles National Forest it crosses RCAs associated with West Fork Liebre Gulch, Liebre Gulch, Trough Canyon, Posey Canyon, Big Oak Flats, Canton Canyon, Eltter Canyon, Charlie Canyon, Dry Canyon, and various unnamed streams.

At the request of the USFS, a RUSLE analysis to estimate the rate of erosion resulting from construction and operation of the Project was performed for the portion of Segment D that crosses the Angeles National Forest. Segment D would affect eight subwatersheds: Gorman Creek, Liebre Gulch-Piru Creek, Lake Piru-Piru Creek, Middle Castaic Creek, Upper Castaic Creek, Lower Bouquet Creek, Lower Castaic Creek, and San Francisquito Canyon. These watersheds have an average estimated baseline erosion rate of 48.15 tons/acres/year. Results of the RUSLE model predicted an average post-construction erosion increase of 0.68 percent (48.43 tons/acre/year) over baseline for the affected subwatersheds. Of the eight subwatersheds, Liebre Gulch-Piru Creek would have the largest potential increase (2.26 percent) over baseline conditions from construction of Alternative 1 (please see Appendix B for details of the RUSLE analysis).

Existing roads (access level 1) would be used for construction, operation, and maintenance within the greater portion of the Antelope Valley, although some may require widening or vegetation clearing (access level 2). In some areas of relatively flat terrain, especially between mile marker 2.5 and 5.4, new roads would be required (access level 3).

Existing access and spur roads would be utilized to the maximum extent possible for construction, operation, and maintenance of Segment D within the Angeles National Forest; however, some sections of the Segment D corridor have no access roads, and new roads would have to be constructed. Terrain in these sections is mountainous, with ground slopes ranging from 10 percent (access level 4) to greater than 30 percent (access level 6). Potential for erosion increases with increased ground slope. New roads built on slopes of 20 percent to 30 percent (access level 4) can result in permanent disturbance of approximately 4.8 to 7.7 acres per mile of transmission line, new roads built on slopes of 20 percent to 30 percent (access level 5) can result in permanent disturbance of approximately 7.7 to 11.6 acres of permanent disturbance per mile of transmission line, and new roads built on slopes of greater than 30 percent (access level 6) can result in permanent disturbance of approximately 11.6 to 15.5 acres per mile of transmission line.

In the San Gabriel Mountains outside the boundaries of the Angeles National Forest, existing roads are available for use (access levels 1 and 2) except at mile marker 37.2, which would require a new access level 6 road; and at mile markers 39.2, 45.3, and 47.2, where new access level 4 roads would be required.

Along Segment D within the Angeles National Forest, where existing access is limited or where resources are very sensitive, helicopter construction would be utilized as a general mitigation measure to reduce the need for construction of new access roads for tower construction. This measure would minimize ground disturbance associated with crane pads, structure laydown areas, and the need for large construction vehicles and equipment. In certain areas of the ANF, new temporary access roads may be constructed for access to pulling and tensioning sites and staging areas. Acres of disturbance for helicopter construction have been estimated on a per mile basis for general analysis, and this estimated acreage has been utilized for overall ground disturbance calculations.

Construction of Segment D would result in temporary ground disturbance ranging from 348.0 acres to 371.9 acres (average temporary ground disturbance 360.0 acres), and permanent ground disturbance would range from 71.5 acres to 116.4 acres (average permanent ground disturbance 94.0 acres).

Potential impacts resulting from construction, operation, and maintenance activities within Segment D include impacts to water quality, creation of erosion or siltation on- or off-site, increase in the rate or amount of surface water runoff resulting in flooding, creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, contribution of additional sources of polluted runoff, placement of tower structures within a 100-year floodplain, and potential for damage from inundation by seismic seiche.

The level of magnitude of potential impacts resulting from the Project increases with slope, as discussed above. Within the relatively flat slopes of the Antelope Valley, unmitigated impacts range from low to moderate; as Segment D crosses into mountainous terrain, impact levels prior to mitigation range from low to high, depending on the resource (refer to Table 6.1). For example, the potential for erosion and related impacts is greatest on steep slopes; therefore, impact levels related to erosion would be higher than impact levels on relatively flat terrain.

Implementation of recommended MMs would reduce impact levels by one degree; i.e., high impacts would be mitigated to a moderate level, moderate impacts would be mitigated to a low level, and low impacts would be minimized to a negligible level (see Appendix A for details on impact locations and applicable Mitigation Measures).

TABLE 7-4. MITIGATION MEASURES APPLICABLE TO SEGMENT D

Impact	Mitigation Measures
Violation of water quality standards, creation of new sources of polluted runoff, or other degradation of water quality.	HYD – 1
Substantial alteration of existing drainage patterns resulting in substantial erosion or siltation on- or off-site.	HYD-1, HYD-2, HELICOPTER
Substantial alteration of existing drainage patterns or substantial increase of the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.	HYD-1, HYD-HELICOPTER
Creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, or contribution of substantial sources of polluted runoff.	HYD-3, HYD-4
Placement of structures within a 100-year flood hazard area which would impede or redirect flood flows.	HYD-5, HYD-6
Result in or be subject to damage from inundation by seiche, tsunami, or mudflow.	HYD – 7

7.5 SEGMENT E

Segment E is approximately 11 miles long, beginning from just south of Cottonwood Creek and travelling southeast, crossing over the eastern edge of the Antelope Buttes toward the Antelope Valley California Poppy Reserve, ending just south of West Avenue G.

Segment E crosses multiple unnamed intermittent and ephemeral streams, two of which, at mile marker 7.8 and 8.1, are associated with a 100-year floodplain. Segment E crosses a broader 100-year floodplain from mile marker 1.6 to 4.2.

Partially hydric soils are mapped throughout the Antelope Valley. Segment E crosses partially hydric soils from mile marker 0.9 to 8.8, and again between mile marker 10.0 and 10.7.

Segment E crosses two SEAs: Joshua Tree Woodlands SEA is crossed from mile marker 5.8 to 6.9, and the San Andreas Rift Zone SEA is crossed between mile marker 7.7 and 10.2.

Existing roads would be utilized for construction and maintenance along Segment E; however, a portion of these existing roads may require widening, vegetation clearing, or additional maintenance (access level 2), resulting in approximately 1.0 to 1.5 acres of permanent disturbance per mile of transmission line.

Construction of Segment E would result in a temporary ground disturbance of 73.5 acres, and permanent ground disturbance would range from 10.4 acres to 12.6 acres (average permanent ground disturbance 11.5 acres).

Potential impacts resulting from construction, operation, and maintenance activities within Segment E include impacts to water quality, creation of erosion or siltation on- or off-site, increase in the rate or amount of surface water runoff resulting in flooding, creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, contribution of additional sources of polluted runoff, and the placement of tower structures within a 100-year floodplain.

Given the relatively low level of ground disturbance and the low angle of slope along the length of Segment E, these impacts were determined to be low. Implementation of MMs would further reduce impacts to a negligible level (see Appendix A for details on impact locations and applicable Mitigation Measures).

TABLE 7-5. MITIGATION MEASURES APPLICABLE TO SEGMENT E

Impact	Mitigation Measures
Violation of water quality standards, creation of new sources of polluted runoff, or other degradation of water quality.	HYD – 1
Substantial alteration of existing drainage patterns resulting in substantial erosion or siltation on- or off-site.	HYD-1, HYD-2
Substantial alteration of existing drainage patterns or substantial increase of the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.	HYD-1, HYD-2
Creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, or contribution of substantial sources of polluted runoff.	HYD-3, HYD-4
Placement of structures within a 100-year flood hazard area which would impede or redirect flood flows.	HYD-5, HYD-6

7.6 SEGMENT F

Segment F is the shortest corridor, measuring approximately four miles. For the purposes of this assessment, Segment F has been divided into two sub-corridors: F1 and F2.

Segment F1 begins at the Antelope Valley California Poppy Reserve and runs southeast 0.08 mile to 115th Street. Although no water resources occur within this segment, potential indirect impacts resulting from construction of the transmission line include impacts to water quality. Existing roads would be used for construction, operation, and maintenance activities along Segment F1. Given the relatively low level of ground disturbance and the low angle of slope along the length of Segment F1, these impacts were determined to be low. Implementation of MMs would further reduce impacts to a negligible level.

Segment F2 begins at 115th Street and continues southeast toward Antelope Substation, owned by SCE. Between mile marker 0.5 and 0.7, Segment F2 crosses an intermittent stream that flows out of Myrick Canyon. This stream has an associated 100-year floodplain, which is crossed from mile marker 0.2 to 0.8. This is the only 100-year floodplain that is crossed by the Segment F2 corridor. Between mile marker 2.0 and 2.2, Segment F2 crosses a second intermittent stream that flows out of the foothills to the southwest.

Segment F2 crosses two mapped areas of partially hydric soils. The first area is crossed from mile marker 0.2 and 0.3, roughly corresponding with the 100-year floodplain. The second area is crossed between mile marker 1.1 and 2.5. No other water resource features are crossed by Segment F2.

Existing roads would be utilized for construction and maintenance along Segment F2; however, a portion of these existing roads may require widening, vegetation clearing, or additional maintenance (access level 2) resulting in approximately 1.0 to 1.5 acres of permanent disturbance per mile of transmission line.

Construction of Segment F1 would result in a temporary ground disturbance of 5.9 acres, and a permanent ground disturbance of 0.7 acres.

Construction of Segment F2 would result in a temporary ground disturbance of 18.2 acres, and permanent ground disturbance would range from 3.4 acres to 5.4 acres (average permanent ground disturbance 4.4 acres).

Potential impacts resulting from construction, operation, and maintenance activities within Segment F2 include impacts to water quality, creation of erosion or siltation on- or off-site, creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, increase in the rate or amount of surface water runoff resulting in flooding, contribution of additional sources of polluted runoff, and the placement of tower structures within a 100-year floodplain.

Given the relatively low level of ground disturbance and the low angle of slope along the length of Segment F2, these impacts were determined to be low. Implementation of MMs would further reduce impacts to a negligible level (see Appendix A for details on impact locations and applicable Mitigation Measures).

TABLE 7-6. MITIGATION MEASURES APPLICABLE TO SEGMENTS F1 AND F2

Impact	Mitigation Measures
Violation of water quality standards, creation of new sources of polluted runoff, or other degradation of water quality.	HYD – 1
Substantial alteration of existing drainage patterns resulting in substantial erosion or siltation on- or off-site.	HYD-1, HYD-2
Substantial alteration of existing drainage patterns or substantial increase of the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.	HYD-1, HYD-2
Creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, or contribution of substantial sources of polluted runoff.	HYD-3, HYD-4
Placement of structures within a 100-year flood hazard area which would impede or redirect flood flows.	HYD-5, HYD-6

7.7 SEGMENTS G AND 2A

Segment G is approximately 21 miles long, 13 miles of which are within the Angeles National Forest. This segment begins at the Antelope Valley California Poppy Reserve and runs south/southwest to the proposed new Haskell Canyon Switching Station. The BRRTP would utilize existing four-circuit structures for approximately two miles, from towers 234-3 to 236-2. The multi-circuit mitigation is proposed in select areas (e.g., Elizabeth Lake, Green Valley) along Segment G where land use and visual resource impacts may be significant.

A localized alternative segment, Segment 2a, would route Segment G around the community of Green Valley. Segment 2a is approximately seven miles in length, and would replace an approximately five-mile section of Segment G that would pass through Green Valley. Segment 2a would divert from Segment G at mile marker 6.2 and turn west around Grass Mountain, then head south along the western side of Portal Canyon, and rejoin the original Segment G alignment at mile marker 11.

Segment G crosses multiple perennial and intermittent streams, including San Francisquito Canyon Creek, an eligible Wild and Scenic River. San Francisquito Canyon Creek is crossed between mile marker 12.1 and 12.4. San Francisquito Canyon Creek has an associated 100-year floodplain which is crossed by this same span. Segment G crosses a 100-year floodplain from mile marker 1.2 to 1.6, associated with a stream flowing out of Myrick Canyon to the southwest. Three additional 100-year floodplains are crossed. Between mile marker 5.4 and 5.6, the corridor crosses the 100-year floodplain associated with an unnamed stream flowing on the south slope of Portal Ridge into Elizabeth Lake; another 100-year floodplain, associated with Portal Canyon, is crossed between mile markers 10.3 and 10.5; a final 100-year floodplain, associated with Bee Canyon Creek, is crossed between mile markers 13.5 and 13.7.

Some areas of partially hydric soils have been mapped within the Segment G corridor between mile marker 1.0 and 6.6; however, beyond mile marker 6.6, the NRCS has no hydric soil information available and the existence of hydric soils within this portion of Segment G is unknown. Mapped areas of partially hydric soils are crossed by Segment G from mile marker 1.0 to 1.9, mile marker 3.4 to 3.8, and mile marker 4.9 to 6.5.

Segment G crosses the California Aqueduct at mile marker 3.9. The Bouquet Pipeline of the Los Angeles Aqueduct, which leads from the main stem of the aqueduct into Bouquet Reservoir, is crossed at mile marker 11.7, and the Los Angeles Aqueduct tunnel is crossed from mile marker 12.4 to 12.8.

One NWI wetland is mapped within the Segment G corridor. From mile marker 5.4 to 5.6, Segment G crosses a PEM wetland.

Segment G crosses the San Andreas Rift Zone SEA from mile marker 3.9 to 5.8, and the Santa Clara River SEA is crossed from mile marker 10.3 to 10.5. The segment corridor also crosses multiple RCAs between mile marker 6.3 and 20.8. The greatest expanse of RCA is crossed between mile marker 15.1 and 16.8; this RCA is associated with San Francisquito Canyon Creek and several of its tributaries.

At the request of the USFS, a RUSLE analysis was performed for the portion of Segment G that crosses the Angeles National Forest. Segment G would affect three subwatersheds: Elizabeth Lake, Lower Bouquet Creek, and San Francisquito Canyon. Results of the RUSLE model predicted an average post-construction erosion increase of 1.18 percent (44.43 tons/acre/year) over baseline for the affected subwatersheds. Of the three affected subwatersheds, Elizabeth Lake would have the largest potential increase (1.59 percent) over baseline (please see Appendix B for details of the RUSLE analysis).

Existing roads would be utilized for construction and maintenance along Segment G; however, most of these existing roads may require widening, vegetation clearing, or additional maintenance (access level 2), resulting in approximately 1.0 to 1.5 acres of permanent disturbance per mile of transmission line. Of those roads that may require upgrading, 0.2 mile occurs within the PEM wetland and 8.2 miles are within RCAs. Access level 2 roads within these areas would result in permanent disturbance of approximately 8.2 to 12.3 acres within Segment G.

Construction of Segment G would result in temporary ground disturbance ranging from 140.9 acres to 142.1 acres (average temporary ground disturbance 141.5 acres), and permanent ground disturbance would range from 25.9 acres to 39.7 acres (average permanent ground disturbance 32.8 acres).

Potential impacts resulting from construction, operation, and maintenance activities within Segment G include impacts to water quality, creation of erosion or siltation on- or off-site, increase in the rate or amount of surface water runoff resulting in flooding, creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, contribution of additional sources of polluted runoff, removal, filling, or hydrological interruption of wetlands, placement of tower structures within a 100-year floodplain, and potential for damage from inundation by seismic seiche.

The level of magnitude of potential impacts resulting from the Project increases with increased sensitivity of the resources impacted, as discussed in Section 6.1. Impact levels also increase with slope; for example, the potential for erosion and related impacts is greatest on steep slopes, therefore impact levels related to erosion would be higher than impact levels on relatively flat terrain.

Within the Segment G corridor, unmitigated impacts range from low to moderate, depending on the resource affected (refer to Table 6.1). With implementation of recommended MMs, moderate impacts would be reduced to a low level, and low impacts would be reduced to a negligible level (see Appendix A for details on impact locations and applicable Mitigation Measures).

Segment 2a closely parallels Burns Canyon, South Portal Canyon, and Munz Canyon, and crosses several unnamed intermittent streams. Two of these streams are tributary to South Portal Canyon, and one is tributary to San Francisquito Canyon. Several Riparian Conservation Areas, associated with Munz Canyon creek and several unnamed streams, are crossed from mile marker 1.1 to 1.5, from 1.6 to 2.3, from 2.9 to 4.0, from 5.1 to 5.5, and from 6.1 to 6.6.

Partially hydric soils are crossed from mile marker 1.1 to 1.2; however, beyond mile marker 1.2 the NRCS has no hydric soil information available and the existence of hydric soils within the remainder of Segment 2a is unknown. No NWI wetlands or 100-year floodplains are crossed by Segment 2a.

Segment 2a crosses the Los Angeles Aqueduct tunnel from mile marker 3.6 to 3.8, and again from mile marker 5.1 to 5.2.

Existing roads would be utilized for construction and maintenance along most of Segment 2a; however, most of these existing roads may require widening, vegetation clearing, or additional maintenance (access level 2), resulting in approximately 1.0 to 1.5 acres of permanent disturbance per mile of transmission line. Of those roads that may require upgrading, 0.9 mile are within RCAs. Access level 2 roads within these areas would result in permanent disturbance of approximately 1.6 to 2.1 acres within Segment 2a.

Approximately 0.5 mile of new (access level 4) roads would have to be constructed from mile marker 5.2 to 5.4 and 6.1 to 6.3. At mile marker 0.9, 5.1, and from mile marker 5.4 to 5.6 new access level 5 roads would be required, and new access level 6 roads would be constructed from mile marker 4.8 to 5.1, and 5.6 to 6.0.

Along Segment 2a within the Angeles National Forest, where existing access is limited or where resources are very sensitive, helicopter construction would be utilized as a general mitigation measure to reduce the need for construction of new access roads for tower construction. This measure would minimize ground disturbance associated with crane pads, structure laydown areas, and the need for large construction vehicles and equipment. In certain areas of the ANF, new temporary access roads may be constructed for access to pulling and tensioning sites and staging areas. Acres of disturbance for helicopter construction have been estimated on a per mile basis for general analysis, and this estimated acreage has been utilized for overall ground disturbance calculations.

Construction of Segment 2a would result in temporary ground disturbance ranging from 130.8 acres to 159.3 acres (average temporary disturbance 145.1 acres), and permanent ground disturbance would range from 28.9 acres to 44.2 acres (average permanent ground disturbance 36.5 acres).

Potential impacts resulting from construction, operation, and maintenance activities within Segment 2a include impacts to water quality, creation of erosion or siltation on- or off-site, increase in the rate or amount of surface water runoff resulting in flooding, creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, and contribution of additional sources of polluted runoff.

The level of magnitude of potential impacts resulting from the Project increases with increased sensitivity of the resources impacted, as discussed in Section 6.1. Impact levels also increase with slope; for example, the potential for erosion and related impacts is greatest on steep slopes, therefore impact levels related to erosion would be higher than impact levels on relatively flat terrain.

Within the Segment 2a corridor, unmitigated impacts range from low to high, depending on the resource affected (refer to Table 6.1). With implementation of recommended MMs, high impacts would be reduced to moderate, moderate impacts would be reduced to a low level, and low impacts would be reduced to a negligible level (see Appendix A for details on impact locations and applicable Mitigation Measures).

TABLE 7-7. MITIGATION MEASURES APPLICABLE TO SEGMENTS G AND 2A

Impact	Mitigation Measures
Violation of water quality standards, creation of new sources of polluted runoff, or other degradation of water quality.	HYD – 1
Substantial alteration of existing drainage patterns resulting in substantial erosion or siltation on- or off-site.	HYD-1, HYD-2, HELICOPTER
Substantial alteration of existing drainage patterns or substantial increase of the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.	HYD-1, HYD-2, HELICOPTER
Creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, or contribution of substantial sources of polluted runoff.	HYD-3, HYD-4
Placement of structures within a 100-year flood hazard area which would impede or redirect flood flows.	HYD-5, HYD-6

7.8 SEGMENT H

Segment H is approximately 20 miles long, and would parallel SCE's Antelope – Pardee transmission line, currently under construction. Segment H would begin at Antelope Substation, owned by SCE, and run south/southwest to the proposed Haskell Canyon Switching Station. From the northern border of the Angeles National Forest, near mile marker 2.5, to the southern border near mile marker 16.5, tower structures would be constructed by helicopter.

For the purpose of this analysis, Segment H has been divided into two sub-corridors: Segment H1 and Segment H2.

Segment H1 begins at Antelope Substation and travels southwest approximately 2.7 miles. This segment crosses several unnamed intermittent streams that carry stormwater away from the California Aqueduct. Segment H1 crosses the aqueduct at mile marker 2.2, where it also crosses into the San Andreas Rift Zone SEA. At mile marker 2.1, Segment H1 crosses a PUB wetland; this wetland, to which the NWI has given the modifier *Fx* (semi-permanently flooded, excavated), is an ornamental pond.

Existing roads would be utilized for construction and maintenance along Segment H1; however, most of these existing roads may require widening, vegetation clearing, or additional maintenance (access level 2), resulting in approximately 1.0 to 1.5 acres of permanent disturbance per mile of transmission line.

Construction of Segment H1 would result in a temporary ground disturbance of 18.2 acres, and permanent ground disturbance would range from 4.9 acres to 9.2 acres (average permanent ground disturbance 7.1 acres).

Potential impacts resulting from construction, operation, and maintenance activities within Segment H1 include impacts to water quality, creation of erosion or siltation on- or off-site, increase in the rate or amount of surface water runoff resulting in flooding, creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, and contribution of additional sources of polluted runoff.

Given the relatively low level of ground disturbance and the low angle of slope along the length of Segment H1, these impacts were determined to be low. Implementation of MMs would further reduce impacts to a negligible level.

Segment H2 begins south of the California Aqueduct near Power Line Road, and travels southwest approximately 17.1 miles. This corridor crosses multiple perennial and intermittent streams, including Bouquet Canyon Creek. Segment H2 crosses one 100-year floodplain from mile marker 1.7 to 1.9. This floodplain is associated with an unnamed stream crossed at mile marker 1.0, as well as with a PEM wetland at mile marker 1.7. A second PEM wetland is mapped at mile marker 1.0, and a PFO wetland is mapped at mile marker 5.3.

Some areas of partially hydric soils have been mapped within the Segment H2 corridor between mile marker 1.0 and 1.8, mile marker 15.6 and 15.8, mile marker 16.1 and 16.3, and mile marker 16.6 and 16.8; however, within most of the Segment H2 corridor, the NRCS has no hydric soil information available and the existence of hydric soils within the greater portion of Segment H2 is unknown.

RCAs occur throughout the Segment H2 corridor. The largest contiguous expanse of RCA is crossed from mile marker 13.2 to 14.6, with a slightly smaller expanse crossed from mile marker 15.0 to 15.8. These RCAs are associated with unnamed streams tributary to Bouquet Canyon Creek and Haskell Canyon Creek.

Bouquet Reservoir is located west and north of Segment H2 between mile marker 5.0 and 7.5.

Existing roads would be utilized for construction and maintenance along Segment H2 from mile marker 0.0 to 2.5; however, most of these existing roads may require widening, vegetation clearing, or additional maintenance (access level 2), resulting in approximately 1.0 to 1.5 acres of permanent disturbance per mile of transmission line. Both PEM wetlands would be crossed by access level 2 roads, and 1.6 miles of the corridor requiring access level 2 roads are within the San Andreas Rift SEA. Access level 2 roads within these areas would result in permanent disturbance of approximately 8.2 to 12.3 acres within Segment H2.

Segment H2 crosses the Angeles National Forest from mile marker 2.5 to 17.1. Within the boundaries of the Forest, tower structures would be constructed by helicopter, and no new roads would be constructed. While construction by helicopter avoids impacts related to road construction or upgrading, potential exists for impacts related to construction of structure foundations. These potential impacts are the same as potential impacts for road construction or upgrading.

Construction of Segment H2 would result in temporary ground disturbance ranging from 92.2 acres to 105.3 acres (average temporary disturbance 98.7 acres), and permanent ground disturbance would range from 17.1 acres to 29.2 acres (average permanent ground disturbance 23.2 acres).

Potential impacts resulting from construction, operation, and maintenance activities within Segment H2 include impacts to water quality, creation of erosion or siltation on- or off-site, increase in the rate or amount of surface water runoff resulting in flooding, creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, contribution of additional sources of polluted runoff, removal, filling, or hydrological interruption of wetlands, placement of tower structures within a 100-year floodplain, and potential for damage from inundation by seismic seiche.

The level of magnitude of potential impacts resulting from the Project increases with increased sensitivity of the resources impacted, as discussed in Section 6.1. Impact levels also increase with slope; for example, the potential for erosion and related impacts is greatest on steep slopes; therefore, impact levels related to erosion would be higher than impact levels on relatively flat terrain.

Within the Segment H2 corridor, unmitigated impacts range from low to high, depending on the resource affected (refer to Table 6.1) and the ground slope. With implementation of recommended MMs, high impacts would be reduced to a moderate level, moderate impacts would be reduced to a low level, and low impacts would be reduced to a negligible level (see Appendix A for details on impact locations and applicable Mitigation Measures).

TABLE 7-8. MITIGATION MEASURES APPLICABLE TO SEGMENT H1 AND H2

Impact	Mitigation Measures
Violation of water quality standards, creation of new sources of polluted runoff, or other degradation of water quality.	HYD – 1
Substantial alteration of existing drainage patterns resulting in substantial erosion or siltation on- or off-site.	HYD-1, HYD-2, HELICOPTER
Substantial alteration of existing drainage patterns or substantial increase of the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.	HYD-1, HYD-2, HELICOPTER
Creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, or contribution of substantial sources of polluted runoff.	HYD-3, HYD-4
Placement of structures within a 100-year flood hazard area which would impede or redirect flood flows.	HYD – 1
Result in or be subject to damage from inundation by seiche, tsunami, or mudflow.	HYD – 7

7.8.1 115th Street Modification

The 115th Street Modification was proposed as an alternative to Segment H1 to avoid impacts to residents in the Antelope Substation neighborhood. The Modification begins at the Antelope Valley California Poppy Reserve and parallels 115th Street south to the California Aqueduct.

The 115th Street Modification crosses multiple unnamed intermittent streams that carry stormwater away from the California Aqueduct. One 100-year floodplain, associated with the first two unnamed streams, is crossed from mile marker 0.3 to 0.5.

The Modification crosses the aqueduct at mile marker 4.0, where it also crosses into the San Andreas Rift Zone SEA. Mapped areas of partially hydric soils are crossed by the Modification. The broadest expanse of partially hydric soils is crossed between mile marker 0.2 and 2.0; other areas are crossed between mile marker 3.1 and 3.3, and again between mile marker 3.7 and 4.0.

One groundwater well is crossed by the Modification. This well, #07N14W14F001S, is located under the proposed centerline just south of Avenue I. DWR records indicate this well went dry in 1962, and is not currently active.

Existing roads would be utilized for construction and maintenance along the 115th Street Modification; however, most of these existing roads may require widening, vegetation clearing, or additional maintenance (access level 2), resulting in approximately 1.0 to 1.5 acres of permanent disturbance per mile of transmission line. Some portions of the Modification would require new roads to be constructed. Access level 3 roads would be required at mile marker 1.1; from mile marker 1.5 to 1.7, where the Modification crosses an unnamed stream; from mile marker 2.0 to 2.2, where the Modification crosses another unnamed stream; and again at mile marker 4.5, where the Modification crosses another unnamed stream. An access level 4 road would be required at mile marker 4.4, which is another stream crossing. The latter two access roads are within the San Andreas Rift Zone.

Construction of the 115th Street Modification would result in a temporary ground disturbance ranging from 33.0 acres to 33.8 acres (average temporary disturbance 33.4 acres), and permanent ground disturbance would range from 8.6 acres to 15.3 acres (average permanent ground disturbance 12.0 acres).

Potential impacts resulting from construction, operation, and maintenance activities within the 115th Street Modification include impacts to water quality, creation of erosion or siltation on- or off-site, increase in the rate or amount of surface water runoff resulting in flooding, creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, contribution of additional sources of polluted runoff, and placement of tower structures within a 100-year floodplain.

The level of magnitude of potential impacts resulting from the Project increases with increased ground slope; for example, the potential for erosion and related impacts is greatest on steep slopes; therefore, impact levels related to erosion would be higher than impact levels on relatively flat terrain.

Within the 115th Street Modification corridor, unmitigated impacts range from low to high, depending on road access level and slope. With implementation of recommended MMs, high impacts would be reduced to a moderate level, moderate impacts would be reduced to a low level, and low impacts would be reduced to a negligible level (see Appendix A for details on impact locations and applicable Mitigation Measures).

TABLE 7-9. MITIGATION MEASURES APPLICABLE TO THE 115TH STREET MODIFICATION

Impact	Mitigation Measures
Violation of water quality standards, creation of new sources of polluted runoff, or other degradation of water quality.	HYD – 1
Substantial alteration of existing drainage patterns resulting in substantial erosion or siltation on- or off-site.	HYD-1, HYD-2, HELICOPTER
Substantial alteration of existing drainage patterns or substantial increase of the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.	HYD-1, HYD-2, HELICOPTER
Creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, or contribution of substantial sources of polluted runoff.	HYD-3, HYD-4
Placement of structures within a 100-year flood hazard area which would impede or redirect flood flows.	HYD-5, HYD-6

7.9 SEGMENT I

Segment I is approximately 32 miles long. It begins at Antelope Substation and travels southeast toward Palmdale, paralleling the Midway – Vincent 500 kV high voltage transmission line, the Antelope – Vincent 230 kV transmission line, and the Antelope – Mesa 230 kV transmission line, all owned by SCE. At LADWPs existing 500 kV Victorville – Rinaldi transmission line and Adelanto – Rinaldi 230 kV transmission line, Segment I turns west/southwest to Haskell Canyon.

Segment I crosses or parallels multiple perennial and intermittent streams, including Amargosa Creek from mile marker 8.2 to 8.4, Anaverde Creek at mile marker 10.4, 12.9, and 13.5, Mint Canyon at mile marker 23.0, Vasquez Canyon Creek from mile marker 26.5 to 26.7, Bouquet Canyon from mile marker 28.7 to 28.9, and Haskell Canyon from mile marker 31.1 to 31.7. Multiple 100-year floodplains are crossed, including those associated with Amargosa Creek, from mile marker 8.2 to 8.5; Mint Canyon Creek, from mile marker 23.3 to 23.5; Vasquez Canyon Creek, from mile marker 26.5 to 26.7; and Bouquet Canyon Creek, from mile marker 28.6 to 28.9; and Haskell Canyon Creek, from mile marker 31.1 to 31.7.

Broad expanses of partially hydric soils are mapped throughout the Segment I corridor. The first is crossed from mile marker 3.0 to .04. The second is between mile marker 7.3 to 11.1, and is partially within the San Andreas Rift Zone SEA. Another expanse is crossed from mile marker 12.4 to 17.0, an area also crossed by multiple perennial and intermittent streams, including Anaverde Creek. A third expanse is mapped along Bouquet Canyon from mile marker 28.6 to 29.7. Additional expanses of partially hydric soils are mapped in association with streams in Mint Canyon, Vasquez Canyon, and Haskell Canyon, as well as several unnamed intermittent streams.

Segment I crosses the California Aqueduct at mile marker 5.0.

As mentioned above, Segment I crosses into the San Andreas Rift Zone SEA from mile marker 4.9 to 9.2. From mile marker 27.3 to 27.7, Segment I also crosses the Cruzan Mesa Vernal Pools SEA. This 0.4-mile span of the corridor crosses through the northernmost section of this SEA, but does not cross vernal pools; in fact, no NWI wetlands are mapped within the Segment I corridor.

At the request of the USFS, a RUSLE analysis was performed for the portion of Segment I that crosses the Angeles National Forest. Segment I would affect three subwatersheds: Mint Canyon, Sand Canyon-Santa Clara River, and Aqua Dulce Canyon. Results of the RUSLE model predicted an average post-construction erosion increase of 1.35 percent (35.82 tons/acre/year) over baseline for the affected subwatersheds. Of the three affected subwatersheds, Agua Dulce Canyon would have the largest potential increase (2.04 percent) over baseline (please see Appendix B for details of the RUSLE analysis).

Existing roads would be utilized for construction and maintenance along most of Segment I; however, most of these existing roads may require widening, vegetation clearing, or additional maintenance (access level 2), resulting in approximately 1.0 to 1.5 acres of permanent disturbance per mile of transmission line. Access level 2 roads would be required along 4.3 miles of the of the corridor within the San Andreas Rift Zone SEA. Level 4 access roads would be required along mile marker 17.8 to 17.9. Level 5 access roads would be required from mile marker 12.2 to 12.3, 23.7 to 23.8, and 28.7 to 29.0. While water features are associated with only one of these roads (at mile marker 12.2), potential exists for downstream impacts resulting from erosion at each of these locations, given the steepness of the ground slope.

Construction of Segment I would result in a temporary ground disturbance ranging from 226.9 acres to 235.1 acres (average temporary disturbance 231.0 acres), and permanent ground disturbance would range from 54.6 acres to 95.9 acres (average permanent ground disturbance 75.2 acres).

Potential impacts resulting from construction, operation, and maintenance activities within Segment I include impacts to water quality, creation of erosion or siltation on- or off-site, increase in the rate or amount of surface water runoff resulting in flooding, creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, contribution of additional sources of polluted runoff, and placement of tower structures within a 100-year floodplain.

The level of magnitude of potential impacts resulting from the Project increases with increased sensitivity of the resources impacted, as discussed in Section 6.1. Impact levels also increase with slope; for example, the potential for erosion and related impacts is greatest on steep slopes; therefore, impact levels related to erosion would be higher than impact levels on relatively flat terrain.

Within the Segment I corridor, unmitigated impacts would range from low to high, depending on the resource affected (refer to Table 6.1) and the ground slope. With implementation of recommended MMs, high impacts would be reduced to a moderate level, moderate impacts would be reduced to a low level, and low impacts would be reduced to a negligible level (see Appendix A for details on impact locations and applicable Mitigation Measures).

TABLE 7-10. MITIGATION MEASURES APPLICABLE TO SEGMENT I

Impact	Mitigation Measures
Violation of water quality standards, creation of new sources of polluted runoff, or other degradation of water quality.	HYD – 1
Substantial alteration of existing drainage patterns resulting in substantial erosion or siltation on- or off-site.	HYD-1, HYD-2, HELICOPTER
Substantial alteration of existing drainage patterns or substantial increase of the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.	HYD-1, HYD-2, HELICOPTER

Impact	Mitigation Measures
Creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, or contribution of substantial sources of polluted runoff.	HYD-3, HYD-4
Placement of structures within a 100-year flood hazard area which would impede or redirect flood flows.	HYD-5, HYD-6

7.10 NEW 230 KV CIRCUIT (SEGMENT J)

LADWP proposes to add approximately 12 miles of a new 230 kV transmission circuit onto the existing Castaic – Olive 230 kV transmission line structures (towers 1-1 through 12-1).

Addition of the new circuit would involve many of the same activities as construction of a new transmission line (surveying ROW, clearing or upgrading of existing access and spur roads, clearing of ROW, ground rod and conductor installation, and cleanup). It should be noted that the new double-circuit 230 kV structures proposed along Segment D would be located to the south of the existing tower structures on Segment J.

Segment J crosses multiple perennial and intermittent streams, including Dry Canyon Creek at mile marker 1.2, San Francisquito Canyon Creek at mile marker 1.9, Charlie Canyon at mile marker 3.4, and Bitter Canyon at mile marker 4.3. This segment also crosses the 100-year floodplain associated with San Francisquito Canyon Creek from mile marker 1.9 to 2.1, and a second 100-year floodplain from mile marker 6.4 to 6.6. This floodplain is associated with the spillway at Castaic Lake. Segment J also crosses the Los Angeles Aqueduct tunnel from mile marker 1.2 to 1.4.

Although existing roads would be used along Segment J, many of these roads would require upgrading (access level 2). Implementation of recommended MMs would reduce moderate impacts to a low level, and low impacts to a negligible level. Potential impacts resulting from circuit upgrade activities along Segment J include impacts to water quality, erosion or siltation on- or off-site, and damage from inundation by seismic seiche. When combined with the degree of ground slope, potential impacts within Segment J range from low to moderate.

TABLE 7-11. MITIGATION MEASURES APPLICABLE TO SEGMENT J

Impact	Mitigation Measures
Violation of water quality standards, creation of new sources of polluted runoff, or other degradation of water quality.	HYD – 1
Substantial alteration of existing drainage patterns resulting in substantial erosion or siltation on- or off-site.	HYD-1, HYD-2
Substantial alteration of existing drainage patterns or substantial increase of the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.	HYD-1, HYD-2
Result in or be subject to damage from inundation by seiche, tsunami, or mudflow.	HYD – 7

7.11 RECONDUCTORING

Reconductoring of the existing BR-RIN transmission line would require many of the same activities as would construction of the new transmission line, including surveying of the ROW, upgrading of existing access and spur roads, clearing of the ROW, conductor installation, ground rod installation, and cleanup. Some of the towers would need to be modified or replaced, and foundations may need to be reinforced to carry the additional weight of the new, heavier conductor. All work would be restricted to the existing ROW.

The BR-RIN line is located along Segments A, B, G, and K. Potential impacts resulting from upgrading activities would be related to upgrading of existing roads and clearing of the ROW, and would include impacts to water quality, creation of erosion or siltation on- or off-site, increase in the rate or amount of surface water runoff resulting in flooding, creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, or contribution of additional sources of polluted runoff, and placement of tower structures within a 100-year floodplain.

TABLE 7-12. MITIGATION MEASURES APPLICABLE TO RECONDUCTORING

Impact	Mitigation Measures
Violation of water quality standards, creation of new sources of polluted runoff, or other degradation of water quality.	HYD – 1
Substantial alteration of existing drainage patterns resulting in substantial erosion or siltation on- or off-site.	HYD-1, HYD-2
Substantial alteration of existing drainage patterns or substantial increase of the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.	HYD-1, HYD-2
Creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, or contribution of substantial sources of polluted runoff.	HYD-3, HYD-4
Placement of structures within a 100-year flood hazard area which would impede or redirect flood flows.	HYD-5, HYD-6

7.12 NEW SWITCHING STATION

The proposed new switching station in Haskell Canyon would be located on LADWP-owned property south of the Angeles National Forest. Construction of the new Haskell Canyon Switching Station would consist of clearing and upgrading of access roads, site grading and development, installation of electrical conduits, structures, and equipment.

The switching station yard would include a paved internal access road approximately 16 feet wide, along with a 100 foot by 100 foot gravel parking area, and would be enclosed by chain-link fencing with barbed-wire extension for security; this would create a station footprint of 2.7 acres. An additional 16.7 acres would be developed at the switching site to accommodate additional road and fencing. A total of 19.4 acres would be considered permanent impact.

An unnamed intermittent stream, tributary to Haskell Canyon Creek, flows across the northern portion of the property. This stream has no associated 100-year floodplain.

Potential impacts resulting from construction, operation, and maintenance of the new Haskell Canyon Switching Station would be impacts to water quality, creation of erosion or siltation on- or off-site, increase in rate or amount of surface water runoff resulting in flooding, and contribution of additional sources of polluted runoff.

Without mitigation, these impacts are determined to be moderate; with implementation of recommended MMs, the impacts would be reduced to low.

TABLE 7-13. MITIGATION MEASURES APPLICABLE TO NEW HASKELL CANYON SWITCHING STATION

Impact	Mitigation Measures
Violation of water quality standards, creation of new sources of polluted runoff, or other degradation of water quality.	HYD – 1

Impact	Mitigation Measures
Substantial alteration of existing drainage patterns resulting in substantial erosion or siltation on- or off-site.	HYD-1, HYD-2
Substantial alteration of existing drainage patterns or substantial increase of the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.	HYD-1, HYD-2
Creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, or contribution of substantial sources of polluted runoff.	HYD-3, HYD-4

7.13 EXPANSION OF EXISTING BARREN RIDGE SWITCHING STATION

LADWP proposes to expand the existing Barren Ridge Switching Station to the east by 235 feet by 500 feet, creating a total station size of 485 feet by 500 feet (approximately 5.6 acres). The expansion area would include additional electrical structures for additional lines, a material staging area, an internal roadway, and a drainage area.

Although there are no water features on site, expansion of the Barren Ridge Switching Station would have potential to impact water resources off-site, including Pine Tree Canyon Creek which is approximately 0.5 mile south of the switching station.

Expansion activities of the existing switching station would be very similar to the construction of the new Haskell Canyon Switching Station, and would include clearing and upgrading of access roads, site grading and development, installation of electrical conduits, structures, and equipment. Potential impacts would include impacts to water quality, creation of erosion or siltation on- or off-site, increase in rate or amount of surface water runoff resulting in flooding, and contribution of additional sources of polluted runoff.

Without mitigation, these impacts are determined to be low; with implementation of recommended MMs, the impacts would be reduced to negligible.

TABLE 7-14. MITIGATION MEASURES APPLICABLE TO EXPANSION OF BARREN RIDGE SWITCHING STATION

Impact	Mitigation Measures
Violation of water quality standards, creation of new sources of polluted runoff, or other degradation of water quality.	HYD – 1
Substantial alteration of existing drainage patterns resulting in substantial erosion or siltation on- or off-site.	HYD-1, HYD-2
Substantial alteration of existing drainage patterns or substantial increase of the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.	HYD-1, HYD-2
Creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, or contribution of substantial sources of polluted runoff.	HYD-3, HYD-4

8.0 ALTERNATIVES

NEPA and CEQA both require consideration of a reasonable range of alternatives to the Proposed Action that would feasibly attain most of the basic objectives of the Project, but avoid or substantially lessen any of the significant or adverse effects of the Project.

8.1 DEVELOPMENT OF ALTERNATIVES

A range of alternatives were identified through a siting analysis, the scoping process, and supplemental studies and consultations. A full discussion of alternatives development can be found in the Alternatives Development Report (POWER 2010).

The regional siting analysis identified nine routing opportunities (Segments A through I) for the new 230 kV transmission line between Barren Ridge Switching Station and the proposed Haskell Canyon Switching Station. Some of the routing opportunities or segments were adjusted or modified based on public input and preliminary environmental review, and preliminary electrical system studies. Each of the nine segments are discussed in detail, including impact analysis, in Section 7.0 of this report. Several of these segments were not used in the formation of alternatives as discussed below.

Segment E was recommended for elimination from analysis in the EIS/EIR. The Segment would require an additional 6.5 miles of transmission line in comparison to the Proposed Action and would not significantly reduce or avoid impacts to air quality, biological, cultural, visual, and water resources. Segment H was also recommended for elimination, due to increased impacts to air quality and noise, along with safety concerns, related to helicopter construction. Cumulative effects for the Project would also increase because of the further disturbance of revegetated and rehabilitated areas and potential for impacts from three transmission line projects in the same vicinity.

Eight routing opportunities (Segments A, B, C, D, F, G, 2a and I) were combined to create end-to-end routing alternatives for the proposed double-circuit 230 kV transmission line between Barren Ridge Switching Station and the proposed Haskell Canyon Switching Station. In addition to routing segments, each Alternative discussed within this section would include other Project components as discussed earlier within this report. These include the addition of a new circuit on existing towers between Castaic Power Plant and Haskell Canyon, reconductoring of the existing BR-RIN transmission line, construction of a new Haskell Canyon Switching Station, and expansion of the existing Barren Ridge Switching Station. Impact assessment and impact results for each of the other Project components listed above, and which are common to each of the Alternatives, are described in Section 7.0. Descriptions and impact assessment of the routing alternatives follow in the sections below.

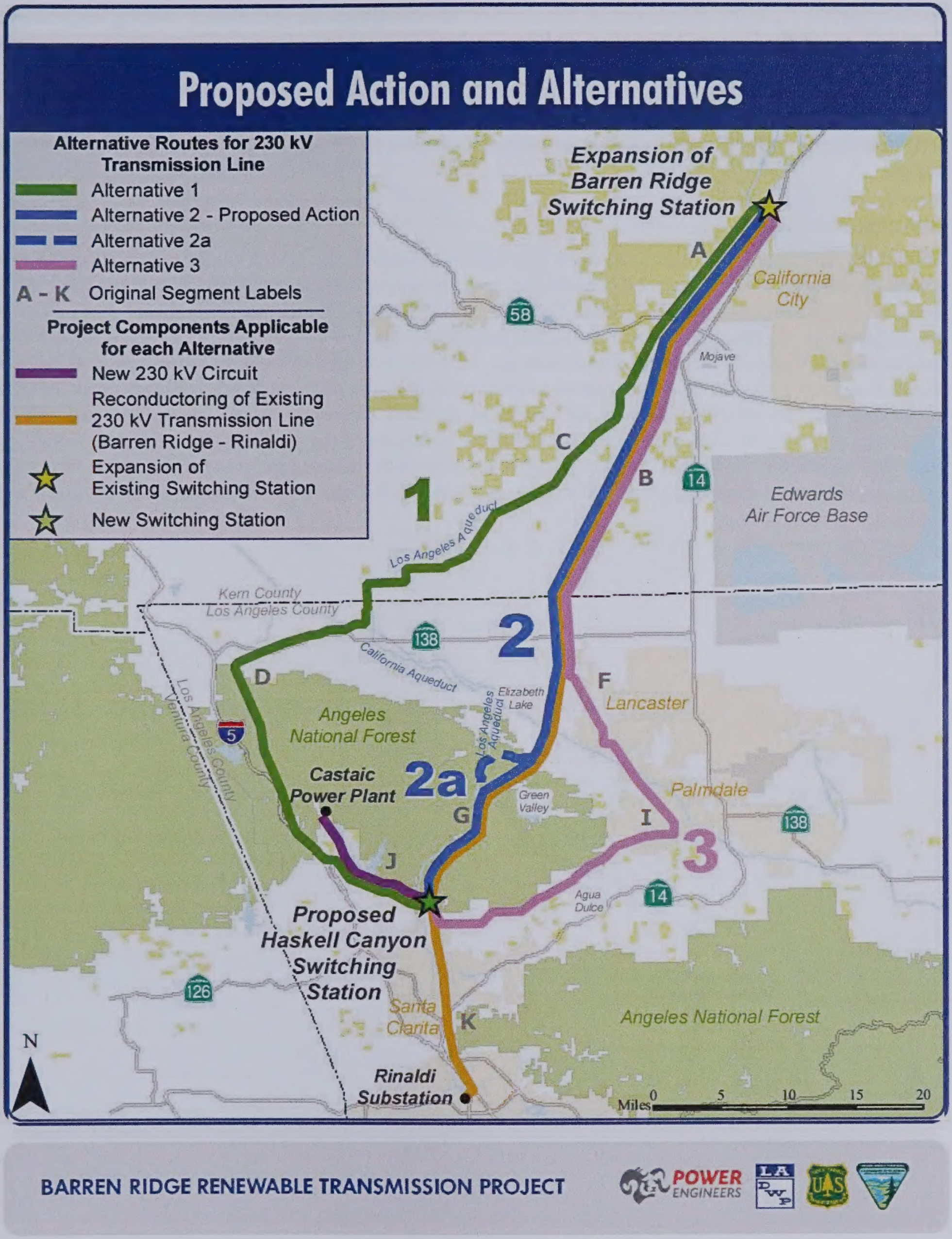
8.2 ALTERNATIVES DESCRIPTION

The following alternatives were identified as a reasonable range of alternatives to the Project that would feasibly attain most of the basic objectives of the Project, but avoid or substantially lessen any of the significant or adverse effects of the Project.

8.2.1. Action Alternatives

In addition to a new double-circuit 230 kV transmission line between the Barren Ridge and Haskell Canyon switching stations, whose route would vary among the action Alternatives, the four action Alternatives would include the following common components: the expansion of the existing Barren Ridge Switching Station, construction of a new Haskell Canyon Switching Station, reconductoring of the existing 230 kV transmission line from the Barren Ridge Switching Station to Rinaldi Substation, and the addition of a new 230 kV circuit on existing towers between the Castaic Power Plant and Haskell Canyon Switching Station. Refer to Figure 8-1.

FIGURE 8-1. ACTION ALTERNATIVES


Proposed Action and Alternatives
Alternative Routes for 230 kV Transmission Line
Alternative 1
Alternative 2 - Proposed Action
Alternative 2a
Alternative 3
A - K Original Segment Labels
Project Components Applicable for each Alternative
New 230 kV Circuit
Reconductoring of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
Expansion of Existing Switching Station
New Switching Station
Expansion of Barren Ridge Switching Station
A
B
C
D
F
G
I
J
K
1
2
2a
3
California City
Mojave
58
14
138
126
5
Edwards Air Force Base
Los Angeles Aqueduct
Kern County
Los Angeles County
California Aqueduct
Elizabeth Lake
Lancaster
Angeles National Forest
Castaic Power Plant
Green Valley
Palmdale
Agua Dulce
Proposed Haskell Canyon Switching Station
Los Angeles County
Ventura County
Santa Clarita
Rinaldi Substation
N
Miles 0 5 10 15 20
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS
LA DWP

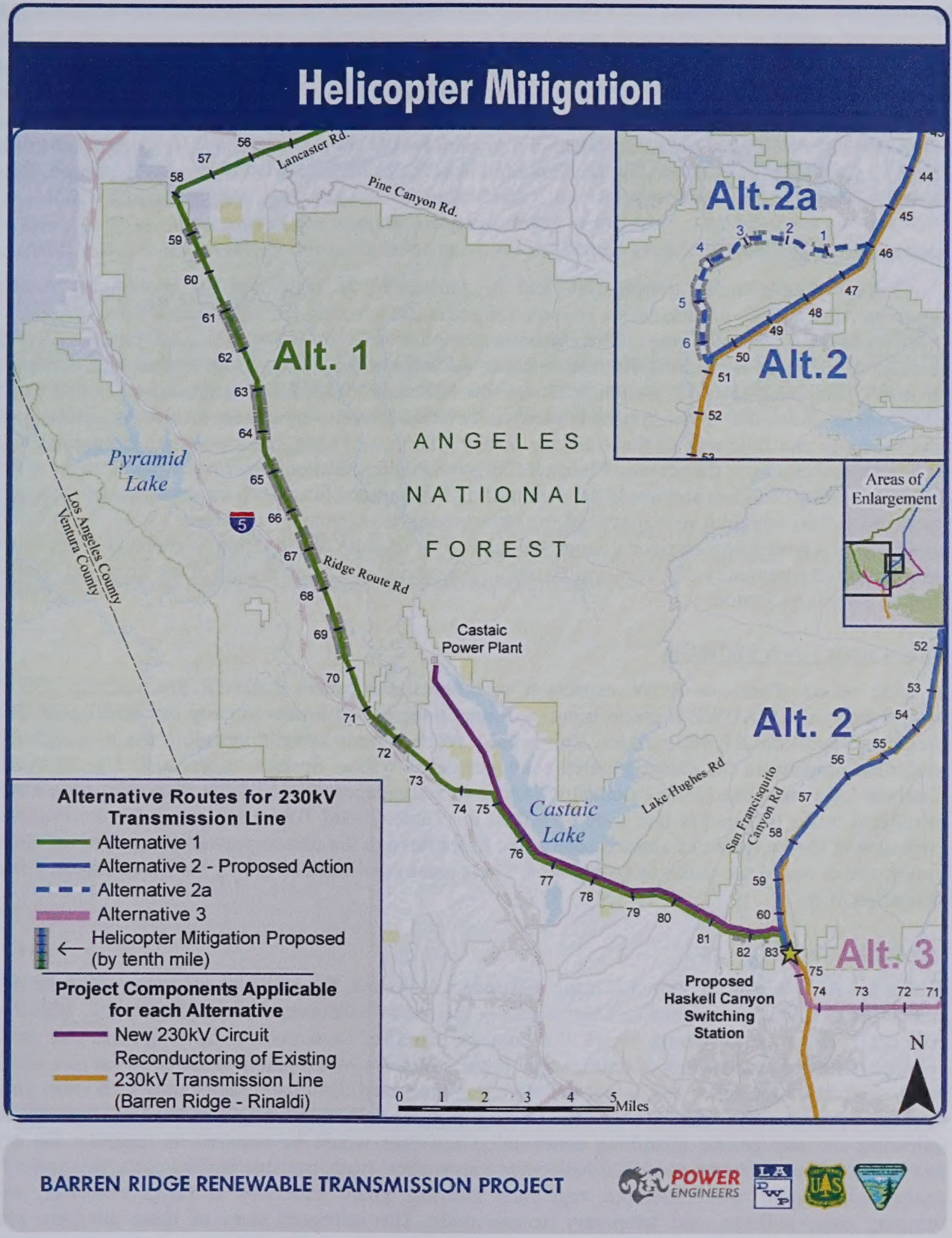
Alternative 1 (Segments A, C, and D)

The Alternative 1 230 kV double-circuit transmission line comprises the preliminary routing Segments A, C, and D, and is the longest Alternative, at 83 miles long. It would run from the Barren Ridge Switching Station to the unincorporated community of Mojave, while paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines. It would continue south-southwest to parallel the Los Angeles Aqueduct to Lancaster Road, where it would travel west to the I-5 utility corridor. It would then run southeast along LADWP's existing Castaic – Rinaldi corridor to the proposed Haskell Canyon Switching Station.

Helicopter Mitigation

Within the ANF where the terrain is steep and access is limited, the USFS would require that the new double-circuit 230 kV structures be constructed with the use of helicopters (such as the Hughes 500 or Bell 212, or Sikorsky Skycrane). Refer to Figure 8-2, the Identified Helicopter Mitigation Locations Map, which illustrates the identified locations for this mitigation. The use of helicopters for the construction of transmission tower structures would eliminate the need for new access roads to structure locations, and would therefore minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites. However, the following site and ground disturbing construction activities would be required to construct the new transmission line within the identified helicopter construction areas: portable landing pads, helicopter fly yards/staging areas, tower structure vegetation clearing, guard structures at major crossings, wire stringing sites, pullouts, and temporary access roads.

FIGURE 8-2. IDENTIFIED HELICOPTER MITIGATION LOCATIONS


Helicopter Mitigation
Alt. 1
Alt.2a
Alt.2
Alt. 2
Alt. 3
ANGELES NATIONAL FOREST
Pyramid Lake
Castaic Lake
Castaic Power Plant
Lancaster Rd.
Pine Canyon Rd.
Ridge Route Rd
Lake Hughes Rd
San Francisquito Canyon Rd
Los Angeles County
Ventura County
5
Proposed Haskell Canyon Switching Station
Areas of Enlargement
Alternative Routes for 230kV Transmission Line
Alternative 1
Alternative 2 - Proposed Action
Alternative 2a
Alternative 3
Helicopter Mitigation Proposed (by tenth mile)
Project Components Applicable for each Alternative
New 230kV Circuit
Reconductoring of Existing 230kV Transmission Line (Barren Ridge - Rinaldi)
0 1 2 3 4 5 Miles
N
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS
LA DWP

Alternative 2 (Segments A, B, and G) –LADWP's Proposed Action

Alternative 2, LADWP's Proposed Action, comprises Segments A, B, and G and is 61 miles long. It begins at the Barren Ridge Switching Station and runs south, paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines. It travels south from the unincorporated community of Mojave, California through the Antelope Valley and approximately one mile east of the Antelope Valley California Poppy Reserve before continuing onto National Forest System lands and ending at the proposed Haskell Canyon Switching Station. The entire route would remain within designated utility corridors and would parallel existing transmission lines. Refer to Section 1.2, Project Description, for a full description of this Alternative.

Alternative 2a (Segments A, B, G and 2a)

The 230 kV double-circuit transmission line in Alternative 2a comprises the preliminary routing Segments A, B, and G, but includes a re-route (Segment 2a) avoiding the unincorporated community of Green Valley. It is 63 miles long and would be very similar to the Proposed Action (Alternative 2), with 56 miles of the same alignment. Alternative 2a would begin at the Barren Ridge Switching Station and run south, paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines. It would travel south from the unincorporated community of Mojave through the Antelope Valley and approximately one mile east of the Antelope Valley California Poppy Reserve before continuing onto NFS lands and ending at the proposed Haskell Canyon Switching Station. The route would remain within designated utility corridors and would parallel existing transmission lines, with the exception of the nearly seven miles that would be routed around the unincorporated community of Green Valley. Segment 2a would create a new utility corridor through the ANF. The re-route would rejoin Segment G south of the unincorporated community of Green Valley before continuing south and ending at the proposed Haskell Canyon Switching Station.

Three-Circuit Tower Mitigation

In areas where there are ROW expansion constraints and where LADWP has existing 230 kV transmission lines, LADWP is proposing to construct three-circuit towers to carry the existing BR-RIN circuit and two new BR-HC circuits. This would avoid various impacts including the acquisition of residential property in the unincorporated communities of Willow Springs (milepost 27.1 to 27.6) and Elizabeth Lake and Green Valley (milepost 44.6 to 46 and milepost 50.8 to 51.7). This mitigation would be utilized in the same areas that were identified for Three-Circuit Tower Mitigation for the Proposed Project, with the exception of approximately five miles through the unincorporated community of Green Valley, which would not utilize this mitigation. These areas are illustrated in 1-7, the Three-Circuit Tower Mitigation Map.

Helicopter Mitigation

Within the ANF where the terrain is steep and access is limited, the USFS would require that the new double-circuit 230 kV structures be constructed by the use of helicopter. Refer to Figure 8-2, Identified Helicopter Mitigation Locations, which illustrates the identified locations for this mitigation. The use of helicopters for the construction of transmission tower structures would eliminate the need for new access roads to structure locations, and would therefore minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites. However, the following site and ground disturbing construction activities would be required to construct the new transmission line within the identified helicopter construction areas: portable landing pads, helicopter fly yards/staging areas, tower structure vegetation clearing, guard structures at major crossings, wire stringing sites, pullouts, and temporary access roads. The estimated sizes of these auxiliary sites (temporary and permanent) and additional construction information is detailed above in the description of the Proposed Action (Alternative 2) and in Appendix C.

Alternative 3 (Segments A, B, F, and I)

The proposed 230 kV double-circuit transmission line in Alternative 3 comprises preliminary routing Segments A, B, F, and I. It is 76 miles long and would begin at the Barren Ridge Switching Station and run south, paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI lines. It would travel south from the unincorporated community of Mojave through the Antelope Valley and approximately one mile east of the Antelope Valley California Poppy Reserve before continuing southeast past SCE's Antelope Substation. The route would then travel toward the city of Palmdale, parallel to SCE's existing high-voltage transmission lines. It would make a sharp turn to the south to parallel LADWP's existing Victorville – Rinaldi 500 kV and Adelanto – Rinaldi 230 kV transmission lines. This Alternative would then parallel these transmission lines west, crossing two miles of the ANF. The Alternative would then parallel LADWP's 500 kV PDCI line north to the proposed Haskell Canyon Switching Station.

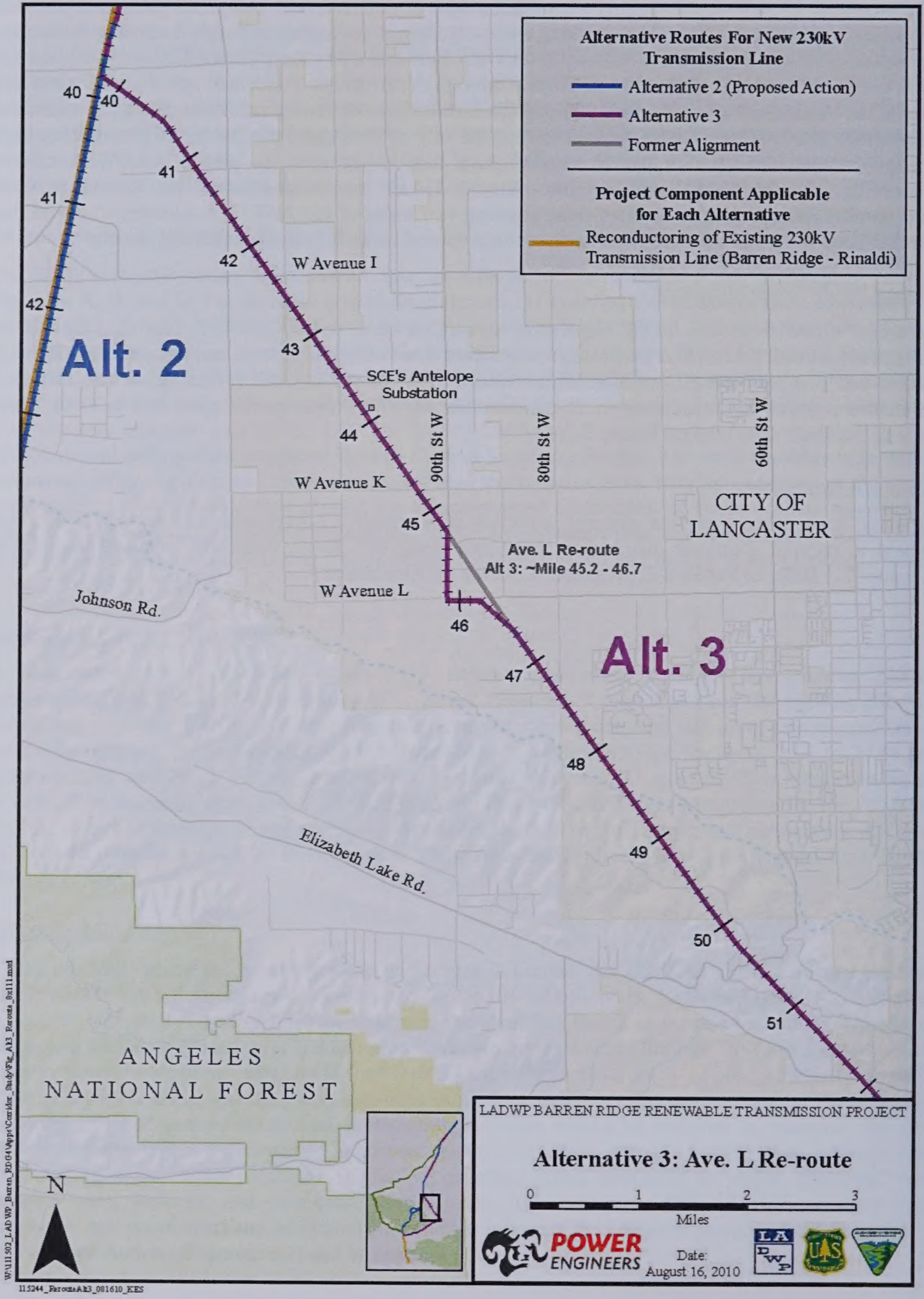
Three-Circuit Tower Mitigation

In areas where there are ROW expansion constraints and where LADWP has existing 230 kV transmission lines, LADWP is proposing to construct three-circuit towers to carry the existing BR-RIN circuit and two new BR-HC circuits. This would avoid various impacts including the acquisition of residential property in the unincorporated communities of Willow Springs (milepost 27.1 to 27.6). Please refer to the small inset map on Figure 1-7.

Avenue L Re-route

To avoid acquisition of private property, a portion of Alternative 3 from mile marker 45.2 to 46.7 was moved to parallel a smaller distribution line south along 90th Street West and then east along West Avenue "L." Refer to Figure 8-3, Avenue L Re-route on Alternative 3.

FIGURE 8-3. AVENUE L RE-ROUTE ON ALTERNATIVE 3


Alternative Routes For New 230kV Transmission Line
Alternative 2 (Proposed Action)
Alternative 3
Former Alignment
Project Component Applicable for Each Alternative
Reconductoring of Existing 230kV Transmission Line (Barren Ridge - Rinaldi)
Alt. 2
Alt. 3
40
41
42
43
44
45
46
47
48
49
50
51
W Avenue I
SCE's Antelope Substation
W Avenue K
W Avenue L
90th St W
80th St W
60th St W
CITY OF LANCASTER
Ave. L Re-route Alt 3: ~Mile 45.2 - 46.7
Johnson Rd.
Elizabeth Lake Rd.
ANGELES NATIONAL FOREST
N
LADWP BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
Alternative 3: Ave. L Re-route
0
1
2
3
Miles
POWER ENGINEERS
Date: August 16, 2010
LA DWP
W:\111502_LADWP_Barren_RDG4\Apps\Corridor_Study\Fig_Alt3_Reroute_8x111.mxd
115244_RerouteAlt3_081610_KES

8.2.2. No Action Alternative

Under the No Action Alternative, the construction of a new 230 kV transmission line, the addition of a new circuit on existing structures from Haskell Canyon to the Castaic Power Plant, the reconductoring of the existing BR-RIN transmission line, the construction of a new Haskell Canyon Switching Station, and the expansion of the existing Barren Ridge Switching Station would not occur. LADWP currently maintains an estimated 147 miles of existing access roads in the Project area, 97 of which are located within the ANF. Current, on-going operation and maintenance activates for existing facilities in the Project area would continue. The EIS/EIR must address the resulting environmental effects from taking no action and compare them to the effects of permitting the Proposed Action or an Alternative to the Proposed Action.

8.3 IMPACT RESULTS—ROUTING ALTERNATIVES

Alternative 1 (Segments A, C, and D)

Within the Angeles National Forest, Segment D crosses eight subwatersheds, with a combined area of 191,957 acres. Assuming no implementation of GPs, post-construction erosion resulting from Segment D would increase an average of 0.68 percent over baseline.

As discussed in Section 7.1 and 7.3, project-related impacts of Segments A and C would be negligible to low, after MMs are implemented. While both segments cross floodplains and multiple intermittent streams, the terrain crossed by Segments A and C is relatively flat, and existing roads would be utilized for the majority of construction within these segments. Ground disturbance would be low, limited to crushing or blading of vegetation where required for work areas. Existing roads would be used for construction within Segment A and within the majority of Segment C.

Impacts of Segment D, as discussed in Section 7.4, would range from high to low after implementation of MMs, depending on the terrain. Segment D crosses steep, rugged terrain (with slopes ranging from 10 percent to greater than 30 percent) where few roads exist that would be suitable for construction. Existing roads would have to be improved to allow for safe construction access and, where no roads exist, new roads would be constructed. Segment D crosses multiple intermittent streams, as well as the Santa Clara River SEA.

Construction of Alternative 1 would result in temporary ground disturbance ranging from 575.5 acres to 599.4 acres (average temporary disturbance 587.5 acres), and permanent ground disturbance would range from 120.5 acres to 199.2 acres Average permanent disturbance 159.8 acres).

Although impacts resulting from Segments A and C would be low to negligible, the higher level of impacts and greater area of impacts resulting from construction of Segment D would increase overall impacts resulting from construction of Alternative 1 to a moderate level.

Alternative 2 (Segments A, B, and G) –LADWP's Proposed Action

Within the Angeles National Forest, Segment G crosses three subwatersheds, with a combined area of 65,172 acres. Assuming no implementation of GPs, post-construction erosion resulting from Segment G would increase an average 1.18 percent over baseline, the smallest increase of the three alternative routes. As discussed in Section 7.1 and 7.2, project-related impacts of Segments A and B would be negligible to low, after MMs are implemented. While both segments cross floodplains and multiple intermittent streams, the terrain crossed by Segments A and B is relatively flat, and existing roads would be utilized for the majority of construction within these segments. Ground disturbance would be low, limited to crushing or blading of vegetation where required for work areas. Existing roads would be used for construction within Segment A and within the majority of Segment B.

Impacts resulting from construction of Segment G, as discussed in Section 7.7, would range from negligible to moderate with implementation of MMs. Segment G crosses multiple intermittent streams and floodplains, and one NWI wetland. Segment G crosses two SEAs, the San Andreas Rift Zone SEA and the Santa Clara River SEA. Terrain within Segment G ranges from relatively flat to slopes of over 30 percent. While Segment G is similar to Segment D in many ways, Segment G is less than half the length of Segment D, resulting in a lesser area of overall impact. In addition, existing roads would be used for construction throughout Segment G; while some roads would have to be improved to allow for safe access of construction vehicles, no new roads would be constructed.

Construction of Alternative 2 would result in a temporary ground disturbance ranging from 397.7 acres to 398.9 acres (average permanent disturbance 398.3 acres), and permanent ground disturbance would range from 57.0 acres to 69.8 acres (average permanent disturbance 63.4 acres).

The initial similarities to Segment D are counteracted by the shorter distance of Segment G and by the greater number of existing roads; thus, the overall impacts of Segment G are lower. In addition, Segment G would affect fewer subwatersheds within Angeles National Forest than would Segment D of Alternative 1, and predicted increase in erosion resulting from construction of Segment G is less than either Segment D or Segment I of Alternative 3. With the negligible to low impacts of Segments A and B taken into consideration, overall impacts of Alternative 2 would be low.

Alternative 2a (Segments A, B, G, and 2a)

Alternative 2a would substitute Segment 2a for the five-mile section of Segment G that crosses through the community of Green Valley. With this substitution, Alternative 2a would be approximately 22.5 miles in length.

Utilization of Segment 2a would increase project-related impacts due the necessity of constructing new access roads in areas where no roads exist. Approximately 1.6 miles of new roads would be constructed along Segment 2a, nearly half of which would be along slopes greater than 30 percent.

Construction of Alternative 2a would result in a temporary ground disturbance ranging from 404.7 acres to 409.1 acres (average temporary disturbance 406.9 acres), and permanent ground disturbance would range from 59.1 acres to 74.5 acres.

Segment 2a crosses five intermittent streams, whereas the corresponding section of Segment G crosses one stream. Segment 2a crosses 3.0 miles of Riparian Conservation Areas as opposed to 0.7 mile of RCAs crossed by its Segment G equivalent. Although impacts resulting from construction of Segment 2a would range from low to moderate, impacts from this segment would not significantly increase impacts resulting from Alternative 2a, which would be low.

Alternative 3 (Segments A, B, F, and I)

As discussed in Section 7.1 and 7.2, project-related impacts of Segments A and B would be negligible to low, after MMs are implemented. While both segments cross floodplains and multiple intermittent streams, the terrain crossed by Segments A and B is relatively flat, and existing roads would be utilized for the majority of construction within these segments. Ground disturbance would be low, limited to crushing or blading of vegetation where required for work areas. Existing roads would be used for construction within Segment A and within the majority of Segment B.

Within the Angeles National Forest, Segment I crosses three subwatersheds, with a combined area of 76,006 acres. Assuming no implementation of GPs, post-construction erosion resulting from Segment I would increase 1.35 percent over baseline, the greatest increase of the three alternative routes.

Segment I crosses relatively flat terrain, a 0.5-mile section of floodplain, and four intermittent streams, as discussed in Section 7.9. Existing roads would be used for construction within Segment I, and while some of these roads would have to be improved, overall ground disturbance within Segment I would be low. With implementation of MMs, project-related impacts within Segment I would be negligible.

Construction of Alternative 3 would result in a temporary ground disturbance ranging from 511.6 acres to 519.8 acres (average temporary disturbance 515.7 acres), and permanent ground disturbance would range from 91.1 acres to 135.0 acres (average permanent disturbance 113.1 acres).

Impacts resulting from construction of Segment I, as discussed in Section 7.9, would range from negligible to moderate, with implementation of MMs. Segment I crosses multiple intermittent streams and floodplains, and two SEAs, the San Andreas Rift Zone SEA and the Cruzan Mesa Vernal Pools SEA. Terrain within Segment I ranges from relatively flat to slopes of over 30 percent. While Segment I is similar to Segment G in many ways, Segment I is approximately 11 miles longer than Segment G, resulting in a greater area of overall impact. Existing roads would be used for construction throughout Segment I; while some roads would have to be improved to allow for safe access of construction vehicles, no new roads would be constructed.

While the project-related impacts resulting from Segments A, B, F, and I are low to negligible, the greater length of this Alternative would increase the quantity of project-related impacts. When quantity of impacts is considered, it is determined that overall impacts of Alternative 3 would be moderate.

8.3.2. No Action Alternative

With the No Action Alternative, no project-related ground disturbance would occur. While project-related construction and ground disturbance of the Proposed Action or any Alternative Action would result in negligible to moderate impacts to hydrology, water quality, and wetlands, the No Action Alternative would result in no such impacts. If the No Action Alternative is selected, hydrology, water quality, and wetlands within the Project area would remain in as they were when this inventory and analysis was conducted.

8.4 CUMULATIVE IMPACTS

8.4.1. Introduction

Cumulative effects are those effects that result from incremental impacts of the proposed action when added to other past, present and reasonably foreseeable future actions. Analysis of cumulative effects places project-specific impacts into a broader context that takes into account the full range of impacts of actions taking place over a given space and time. Cumulative effects may be considered a significant impact to the environment, as degradation of important resources may result from the combined, incremental effects of actions. Cumulative effects may result from individually minor or insignificant actions, which collectively may be considered significant as they accumulate over time and space from one or more actions or sources.

8.4.2. Impact Area

The alternative routes are located within two watersheds, the Antelope-Fremont Valleys watershed and the Santa Clara River watershed. Since the BRRTP and other projects in the region have potential to affect the entire watershed, as opposed to affecting only a smaller geographic area or subwatershed, these two watersheds define the impact area for this cumulative effects analysis.

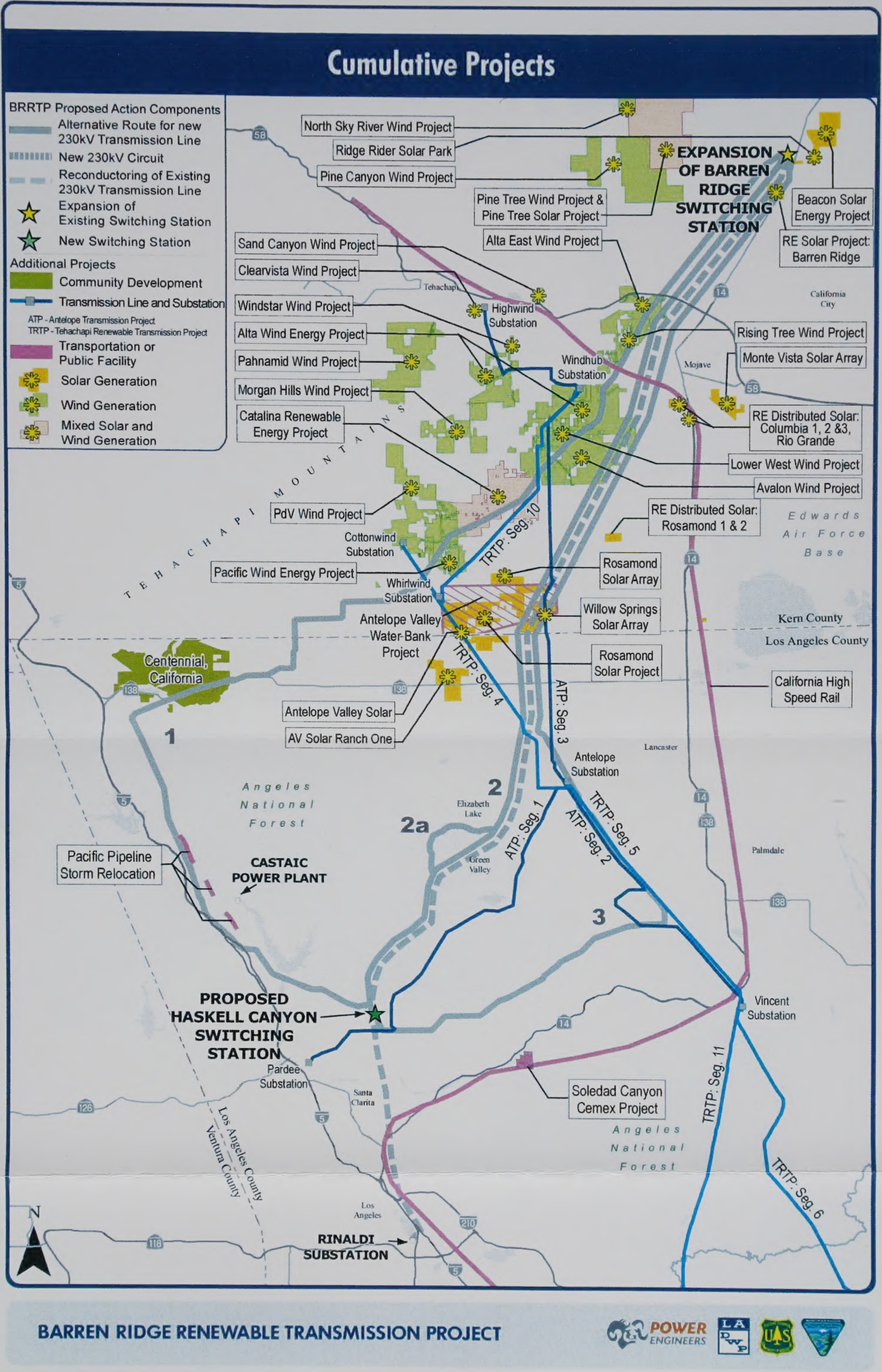
8.4.3. Cumulative Projects List – Major Present and Reasonably Foreseeable Future Actions

The cumulative projects list is used to provide a general context for the cumulative effects. This list includes present and reasonably foreseeable future actions in the Project vicinity that have the potential to combine with the Proposed Action or Alternatives. While a distinct impact area for cumulative impacts and specific present and reasonably foreseeable actions is determined individually for each resource area, collectively, the projects listed below represent the major known and anticipated activities that may occur in the general Project area. The Cumulative Projects Map (Figure xx-1) illustrates the location of energy infrastructure and other major projects in reference to the Proposed Action and Alternatives.

As the project list comprises projects in various stages of planning and development, it is likely that some of these projects would be completed as currently proposed while others would not. To be conservative, the cumulative analysis assumes that all projects listed would be built and in operation during the operating lifetime of the proposed Project. The list was developed in consultation with the following agencies:

- USFS – Angeles National Forest (ANF)
- BLM – Ridgecrest Field Office
- BLM – Palm Springs Field Office
- United States Air Force – Edwards Air Force Base
- Kern County – Planning Department
- Los Angeles County – Department of Regional Planning
- City of California City
- City of Lancaster
- City of Palmdale
- City of Santa Clarita
- City of Los Angeles
- City of San Fernando
- LADWP

FIGURE 8-4. CUMULATIVE PROJECTS


Cumulative Projects
BRRTP Proposed Action Components
Alternative Route for new 230kV Transmission Line
New 230kV Circuit
Reconductoring of Existing 230kV Transmission Line
Expansion of Existing Switching Station
New Switching Station
Additional Projects
Community Development
Transmission Line and Substation
ATP - Antelope Transmission Project
TRTP - Tehachapi Renewable Transmission Project
Transportation or Public Facility
Solar Generation
Wind Generation
Mixed Solar and Wind Generation
North Sky River Wind Project
Ridge Rider Solar Park
Pine Canyon Wind Project
Pine Tree Wind Project & Pine Tree Solar Project
EXPANSION OF BARREN RIDGE SWITCHING STATION
Beacon Solar Energy Project
RE Solar Project: Barren Ridge
Alta East Wind Project
Sand Canyon Wind Project
Clearvista Wind Project
Windstar Wind Project
Alta Wind Energy Project
Pahnamid Wind Project
Morgan Hills Wind Project
Catalina Renewable Energy Project
PdV Wind Project
Pacific Wind Energy Project
Tehachapi
Highwind Substation
Windhub Substation
Cottonwind Substation
Whirlwind Substation
California City
Mojave
Rising Tree Wind Project
Monte Vista Solar Array
RE Distributed Solar: Columbia 1, 2 &3, Rio Grande
Lower West Wind Project
Avalon Wind Project
RE Distributed Solar: Rosamond 1 & 2
Edwards Air Force Base
Rosamond Solar Array
Willow Springs Solar Array
Rosamond Solar Project
Kern County
Los Angeles County
California High Speed Rail
TEHACHAPI MOUNTAINS
Antelope Valley Water Bank Project
Centennial, California
Antelope Valley Solar
AV Solar Ranch One
TRTP: Seg. 10
TRTP: Seg. 4
ATP: Seg. 3
Antelope Substation
Lancaster
1
2
2a
3
Angeles National Forest
Elizabeth Lake
Green Valley
ATP: Seg. 1
ATP: Seg. 2
TRTP: Seg. 5
Palmdale
Pacific Pipeline Storm Relocation
CASTAIC POWER PLANT
PROPOSED HASKELL CANYON SWITCHING STATION
Pardee Substation
Vincent Substation
Santa Clarita
Soledad Canyon Cemex Project
TRTP: Seg. 11
TRTP: Seg. 6
Angeles National Forest
Los Angeles County
Ventura County
Los Angeles
RINALDI SUBSTATION
N
58
14
138
5
126
118
210
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS
LA DWP

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Energy Infrastructure Projects

Transmission Projects

Antelope Transmission Project – Construction of Southern California Edison's (SCE) proposed Antelope Transmission Project is underway and is proceeding in three sequential segments. Construction of Segments 1, 2 and 3A have been completed. Construction of Segment 3B, from Windhub Substation to and including Highwind Substation, has not started and no schedule has been developed by SCE (California Public Utilities – Current Projects).

Segment 1, Antelope – Pardee 500 kV Transmission Line, involved the construction of a new 25.6-mile transmission line between SCE's existing Antelope Substation in the city of Lancaster and SCE's existing Pardee Substation in Santa Clarita, with modifications to and/or expansion of the substations. The line was constructed in an existing SCE 66 kV transmission line right-of-way (ROW) for 23 miles, and within a new ROW for 18 miles. The line is initially energized to 220 kV to serve existing energy demand and can be upgraded to 500 kV to accommodate future needs.

Segment 2, Antelope – Vincent 500 kV Transmission Line, consists of a new 17.8 mile transmission line between the Antelope Substation and SCE's existing Vincent Substation near Acton. Similar to Segment 1, the line would initially be energized at 220 kV and upgraded to meet future needs.

Segment 3, Antelope – Tehachapi Transmission Line, consists of two phases. The first phase, 3A, would involve the construction of a new 26.1-mile 500 kV transmission line between the Antelope Substation and a proposed new substation in the vicinity of the unincorporated community of Mojave (Substation 1). Similar to Segments 1 and 2, this line would be initially energized at 220 kV and upgraded to meet future needs. The second phase, 3B, would involve the construction of a new 9.4-mile 220 kV transmission line from the proposed Substation 1 to a proposed new substation in the Monolith area (Substation 2).

Tehachapi Renewable Transmission Project (TRTP) – SCE is proposing to construct the TRTP, which would involve new and upgraded transmission infrastructure along 173 miles of new and existing rights-of-way, in southern Kern County, portions of Los Angeles County including the ANF, and the southwestern portion of San Bernardino County. Stated objectives for the project include providing the electrical facilities necessary to integrate levels of wind generation in excess of 700 MW and up to 4,500 MW in the Tehachapi Wind Resource Area (California Public Utilities – Current Projects).

The environmental review process for the project is currently underway. Construction began in April 2010 on approved sections. Project construction is estimated to be completed in 2015.

The project is composed of Segments 4 through 11, with Segments 4 through 8 and Segments 10 and 11 being transmission facilities, and Segment 9 being the addition and upgrade of substation facilities. Proposed transmission lines would be constructed primarily within existing rights-of-way. Major project components include:

- Constructing two new single-circuit 220 kV transmission lines within 4 miles of new ROW between the Cottonwood Substation and proposed Whirlwind Substation (Segment 4);
- Constructing a new single-circuit 500 kV transmission line within 16 miles of new ROW between the Antelope Substation and proposed Whirlwind Substation (Segment 4);
- Rebuilding 18 miles of the existing Antelope – Vincent and Antelope – Mesa 220 kV transmission lines to 500 kV standards within existing ROW between the Antelope and Vincent Substations (Segment 5);
- Rebuilding 27 miles of the existing Antelope – Mesa 220 kV transmission line and 5 miles of the existing Rio Hondo – Vincent 220 kV transmission line to 500 kV standards between the Vincent Substation and the southern boundary of the ANF (Segment 6);

- Rebuilding 16 miles of the existing Antelope – Mesa 220 kV transmission line to 500 kV standards between the southern boundary of the ANF and Mesa Substation (Segment 7);
- Rebuilding 33 miles of the existing Chino – Mesa 200 kV transmission line to 500 kV standards between a point 2 miles east of the Mesa Substation and the Mira Loma Substation (Segment 8);
- Rebuilding 7 miles of the existing Chino – Mira Loma No. 1 220 kV transmission line from single-circuit to double-circuit structures (Segment 8);
- Constructing a new 500/220 kV Whirlwind Substation 4 to 5 miles south of the Cottonwood Substation (Segment 9);
- Upgrading the existing Antelope, Vincent, Mesa, Gould, and Mira Loma Substations to accommodate new transmission line construction and system compensation elements (Segment 9);
- Constructing a new single-circuit 500 kV transmission line within 17 miles of new ROW between the Windhub Substation and proposed Whirlwind Substation (Segment 10);
- Rebuilding 19 miles of existing 220 kV transmission line to 500 kV standards in existing ROW between the Vincent and Gould Substations (Segment 11);
- Adding a new 220 kV circuit between the Mesa and Gould Substations on the vacant side of the existing Eagle Rock – Mesa 220 kV transmission line double circuit structures (Segment 11); and
- Installing associated telecommunications infrastructure.

Generation Projects

Numerous wind and solar generation projects are in various stages of planning and development within the Project vicinity. Projects considered include the projects currently undergoing environmental review or projects that have been recently approved. Table 8-1 below summarizes the major known projects and their current status as of April 2011 (County of Kern Environmental Documents and AV Solar Ranch One).

TABLE 8-1. PROPOSED GENERATION PROJECTS IN THE PROJECT VICINITY

Project Name	Project Type	Approximate Generation	Area (acres)	Location	Status
Alta East Wind Project	Wind	300 MW	3,660	Kern County	Application to Kern County deemed complete on Aug. 2010
Alta Wind Energy Center: Alta-Oak Creek Mojave Project	Wind Turbine	800 MW	9,175	Kern County	Approved by Kern County Dec. 2009
Antelope Valley Solar Project	Solar Photovoltaic	650 MW	5,698	Kern County	Draft EIR released April 2011
AV Solar Ranch One	Solar Photovoltaic	230 MW	21,000	Los Angeles County	Final EIR completed Aug. 2010
Avalon Wind Project	Wind	255 MW	10,000	Kern County	Application to Kern County deemed complete on July 2010
Beacon Solar Energy Project	Concentrated Solar	250 MW	2,012	Kern County	Application for Certification approved Aug. 2010
Catalina Renewable Energy Project	Wind Turbine & Solar Photovoltaic	350 MW	7,472	Kern County	Notice of Preparation for a Draft EIR filed Feb. 2011
Clearvista Wind Project	Wind Turbine	40 MW	226	Kern County	Draft EIR released Nov. 2010
Edwards Air Force Base Solar Project	Solar	500 MW	3,288	Kern County	Lease execution anticipated 2012
Lower West Wind Energy Project	Wind Turbine	14 MW	185	Kern County	Draft EIR released April 2011

Project Name	Project Type	Approximate Generation	Area (acres)	Location	Status
Monte Vista Solar Array	Solar Photovoltaic	126 MW	1,040	Kern County	Notice of Preparation for a Draft EIR filed March 2010
Morgan Hills Wind Project	Wind	230 MW	3,604	Kern County	Application submitted Nov. 2010
North Sky River Wind Project	Wind Turbine	326 MW	1,330	Kern County	Notice of Preparation for a Draft EIR filed Nov. 2010
Pacific Wind Energy Project	Wind Turbine	151 MW	8,300	Kern County	Approved by Kern County Oct. 2010
Pahnamid Wind Energy Project	Wind Turbine	411 MW	7,106	Kern County	Notice of Preparation for a Draft EIR filed April 2011
PdV Wind Energy Project	Wind Turbine	300 MW	5,820	Kern County	Approved by Kern County July 2008
Pine Canyon Wind Project	Wind Turbine	150 MW	12,000	Kern County	Preliminary planning
Pine Tree Solar Project	Solar Photovoltaic	10 MW	75	Kern County	Preliminary planning
Pine Tree Wind & Expansion	Wind Turbine	135 MW	n/a	Kern County	Preliminary planning
RE Distributed Solar Project	Solar Photovoltaic	221 MW	1,709	Kern County	Notice of Preparation for a Draft EIR filed Jan. 2011
Ridge Rider Solar Park Project	Solar Photovoltaic	38 MW	475	Kern County	Notice of Preparation of a Draft EIR filed March 2010
Rising Tree Wind Farm	Wind Turbine	234 MW	2,745	Kern County	Notice of Intent to prepare a EIS/EIR filed Jan. 2011
Rosamond Solar Array	Solar Photovoltaic	155 MW	1,177	Kern County	Notice of Preparation of a Draft EIR filed March 2010
Rosamond Solar Project	Solar Photovoltaic	120 MW	960	Kern County	Approved by Kern County Nov. 2010
Sand Canyon Wind Projects	Wind Turbine	40 MW	300	Kern County	Notice of Preparation of a Draft EIR filed Oct. 2010
Willow Springs Solar Array Project	Solar Photovoltaic	160 MW	1,402	Kern County	Notice of Preparation of a Draft EIR filed March 2010
Windstar Wind Energy Project	Wind Turbine	65 MW	1,007	Kern County	Approved by Kern County April 2009

There are also plans in various stages of development to establish additional wind and solar energy projects on BLM land in the Project vicinity. The submission of an application to BLM is a preliminary step in the project planning process, but not all applications ultimately result in successful project development. Below is a list of current applications for wind and solar energy generation projects in the Project vicinity submitted to BLM's Ridgecrest Field Office as of February 2010 (U.S. Department of the Interior, Bureau of Land Management – Renewable Energy).

TABLE 8-2. BLM RIDGECREST OFFICE APPLICATIONS FOR WIND AND SOLAR ENERGY GENERATION PROJECTS IN THE PROJECT VICINITY.

Serial Number	Applicant	Date Application Received, ROW Grant Issued, Last Amended Date	Approximate Area (Acres)	Project Type	Location
CACA 46978	Sean Roberts, Renewable Land LLC	7/1/04	528	Pending Wind	Mojave
CACA 47848	Oak Creek Energy	1/11/06	7,349	Pending Wind	Lucchese
CACA 48536	Oak Creek Energy	7/25/06	1,800	Pending Wind	Soledad Mountain Wind Project
CACA 48820	First Solar (Formally OptiSolar Inc.)	12/13/08	5,760	Pending Solar	Mojave Area

Serial Number	Applicant	Date Application Received, ROW Grant Issued, Last Amended Date	Approximate Area (Acres)	Project Type	Location
CACA 49577	Power Partners SW (enXco)	8/10/07	1,816	Pending Wind	Soledad area
CACA 50171	AES SEAWEST INC	7/3/09	120	Pending Wind	Kern County
CACA 50768	Riverside Wind Energy LLC	4/20/09	480	Pending Wind	Gorman
CACA 51016	Advanced Dev Services, Inc	4/30/09	11,174	Pending Wind	Kern County
CACA 51335	Alta Windpower Dev., LLC	7/13/09	584	Pending Wind	Kern County
CACA 51561	Power Partners Southwest	12/11/09	1,160	Pending Wind	Kern County

Other Major Projects

Transportation and Public Facilities

California High Speed Rail – This project proposes a ±700-mile high speed rail line from Sacramento to San Diego. The Statewide Programmatic EIS/EIR was completed in 2005, and the Bay Area to Central Valley High-Speed Train Program EIS/EIR was completed in 2008. Multiple second-tier project-level environmental documents (with preliminary engineering design) are currently underway (California High Speed Rail Authority).

Pacific Pipeline Storm Relocation Project and Access Road Repairs – Pacific Pipeline is proposing to relocate several miles of crude oil pipeline to more stable ground within the ANF. Project implementation was expected in November 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Antelope Valley Water Bank Project – This project proposes to develop facilities to store and recharge imported surface water and associated delivery and distribution pipelines. The 13,440-acre facility area would be bounded by the Kern/Los Angeles County border line (also known as Avenue A) to the south and Rosamond Boulevard to the north, and between 170th Street West and 100th Street West in unincorporated Kern County (U.S. Department of the Interior, Bureau of Reclamation – Mid-Pacific Region).

Soledad Canyon Cemex Project – The Soledad Canyon Cemex project would be a 56-million-ton sand and gravel mining project in the Soledad Canyon area. The BLM approved the project with mitigating measures in 2000, and the Interior Board of Land Appeals affirmed that decision in 2002. A City of Santa Clarita challenge to the US Supreme Court was denied in 2006. This project is pending development with ongoing challenges and delays (Cemex United States).

Community Development

Centennial, California – The proposed project site consists of 12,000 acres located one mile east of Interstate 5 (I-5) and adjacent to State Highway 138 in Los Angeles County. The project would include a specific plan and subdivision entitlements (i.e., tract maps and conditional use permits) for a master planned community. The specific plan proposes a maximum of 23,000 dwelling units and 14 million total square feet of non-residential development of employment areas (12,233,390 square feet) and retail serving centers (1,986,336 square feet), anticipated to be built over approximately 20 years, with build-out expected in 2030. If the project is approved by Los Angeles County, it is estimated that the non-residential development may generate approximately 31,000 jobs. The draft Specific Plan for the unincorporated community of Centennial was submitted to Los Angeles County in February 2003 and is currently being reviewed by the county (Centennial, California).

Maintenance and Landscape Management Projects

Bouquet Canyon Road Realignment – Los Angeles County Department of Public Works is proposing to straighten some sections of Bouquet Canyon Road and to raise the road surface by approximately nine feet. A Memorandum of Understanding between ANF and Los Angeles County is currently under development to initiate the project (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

San Francisquito Road Rehabilitation and Sediment Disposal Site – Los Angeles County Department of Public Works is proposing a road realignment and new bridge along San Francisquito Road within the ANF and to use eight acres of Forest land as a spoils site in support of construction activities. Public Scoping began in June 2007, and a decision was expected in September 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Old Ridge Route Storm Damage Repair – USFS is proposing to repair and provide maintenance to seven storm-damaged locations along the Old Ridge Route in ANF. A decision on the project is expected in late 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Livestock Grazing Allotments – BLM currently authorizes both cattle and sheep grazing on 11 grazing allotments in and around the project area. The livestock are authorized with 10 year permits/leases and yearly authorizations. These allotments encompass over one half million acres of BLM-managed lands. The number of livestock grazed each year depends upon weather conditions. The majority of the livestock are sheep. The number of sheep average around thirty thousand head. Three of the allotments support several thousand head of cattle (Harris 2010).

Tule Ridge/South Portal Fuels Reduction Project – USFS proposes fuels reduction and re-establishment of a fuel break to provide protection to unincorporated community of Green Valley. The project would also enhance wildlife for mammals and birds (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Jupiter Fuelbreak Project – USFS proposes to re-establish an existing fuel break that begins southwest of the unincorporated community of Green Valley and travels east, bisecting Jupiter Mountain, before heading south to Bouquet Reservoir.

Santa Clara/Mojave River Rangers District Plantation Maintenance Project – The proposed project would consist of vegetation maintenance at 13 plantations located within the ANF in order to reduce wildfire risk, and improve wildlife habitat and the vitality of individual remaining trees. Proposed actions include removal of dead trees, thinning of live trees, pruning, removing weeds, and planting for reforestation where necessary. This action was approved by the District Ranger in January 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Lake Hughes Plantation Restoration Project – The proposed project would restore unauthorized off-highway vehicle trails at the Christian and Taylor Plantations located within the ANF in order to reduce soil erosion, the spread of weeds, destruction of native plants, soil compaction, and wildlife habitat loss. Proposed actions include recontouring and decompacting soils, reseeding with native species, and reinforcing check dams. The project was approved by the District Ranger in 2009 and scheduled for implementation in January 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Bouquet and San Francisquito Habitat Improvement Project – The project proposes invasive species removal in Bouquet and San Francisquito Canyons (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Local Projects

In conjunction with the major projects listed above, a summary of local foreseeable projects within the study area that could contribute to cumulative effects are summarized in the table below. These proposed projects were gathered from applications to the planning departments of the various jurisdictions and have been categorized by project type.

TABLE 8-3. PROPOSED LOCAL PROJECTS IN THE PROJECT VICINITY.

	Kern County	Los Angeles County[1]	City of California City	City of Palmdale[2]	City of Lancaster	City of Santa Clarita	City of Los Angeles	City of San Fernando
Single Family Residential (may include multiple units)	1	96	0	14	93	10	2	2
Multi Family Residential (may include multiple units)	28	9	0	9	2	1	2	1
Schools	2	2	0	9	2	0	0	0
Religious Uses	10	7	0	13	0	0	1	1
Recreational Facilities	7	5	0	7	1	0	0	1
Public Facilities – police, fire, library, correctional	2	5	0	4	0	0	0	0
Commercial/ Office Development	40	33	0	96	6	21	2	7
Hotels/Motels	1	0	0	9	2	1	1	2
Medical/Care Facilities	4	6	0	16	0	1	0	1
Industrial Facilities	20	0	0	17	1	6	2	2
Mining Operations	15	0	0	4	0	0	0	0
RV Facilities	2	0	0	0	0	0	0	0
Animal Facilities	8	6	0	1	0	0	0	0
Aviation Facilities	2	0	0	0	0	0	0	0
Non-Commercial Energy Facilities	1	2	0	0	0	0	0	0

[1] Projects listed for Los Angeles County include all projects that could contribute to cumulative effects within the following County Districts: Antelope Valley West, Bouquet Canyon, Castaic Canyon, Chatsworth, Lancaster, Leona Valley, Mount Gleason, Newhall, North Palmdale, Palmdale, Quartz Hill, Sand Canyon, Soledad. Some identified projects included may be outside of the study area.

[2] Projects listed for the City of Palmdale include all projects that could contribute to cumulative effects within the City. Some identified projects included may be outside of the study area.

8.4.4. Direct and Indirect Impacts Summary

Construction and operation of the BRRTP alternatives would potentially impact water quality through ground-disturbing activities, including clearing and grading for structure installation work areas, and access construction.

Disturbed soils accelerate erosion and increase sediment in stormwater runoff to receiving waters, causing increased turbidity and sedimentation. Additionally, fuel, oil, and other fluids used in construction vehicles, equipment, and heavy machinery could enter streams and contaminate water. Project-related ground disturbance could potentially alter drainage patterns within the work areas and result in soil erosion leading to increased sedimentation or increase of the rate or amount of surface water runoff. Grading activities could also potentially create additional sources of runoff, including polluted runoff.

Dewatering during construction activities could potentially release contaminated groundwater to surface water channels or drainage features. Construction of the project could also result in adversely impacting wetlands by removing or degrading wetland soils, damaging or removing wetland plants, or disrupting wetland hydrology. The project would also result in placement of structures within a 100-year floodplain.

Many of the present and reasonably foreseeable projects described above involve grading activities, including large-scale grading activities that would continue for years after the BRRTP is completed. These projects would have potential to affect the impact area by altering drainage patterns, accelerating erosion, and adding additional sediment to local drainages.

Compacted or new paved areas, including railroad beds, would potentially increase the rate or amount of stormwater runoff, or create additional sources of stormwater runoff. Polluted runoff could be introduced to the impact area as oil products collect on new paved surfaces and are washed into the system with stormwater runoff. Projects using improper dewatering procedures could release contaminated groundwater into drainages within the impact area.

Along the foothills and drainages of the Tehachapi Mountains and the San Andreas Rift Zone are PEM and PFO wetlands that could be filled by at least one project, and could be impacted by altered soils, vegetation, or hydrology resulting from other projects.

Most of the projects described above cross or are located within FEMA 100-year floodplains, and would place structures within a 100-year floodplain, potentially impeding or redirecting flood flows.

8.4.5. Cumulative Effects Evaluation

Whenever multiple activities at a single site, or activities at multiple sites, produce similar or complimentary changes to environmental parameters or watershed processes, the resulting impacts can be cumulatively significant, even if they are individually insignificant. For example, soil compaction resulting from construction vehicles driving over a natural surface decreases pore space and collapses conduits between pores, reducing soil porosity and permeability, and increasing runoff rates, which causes erosion. Likewise, replacement of natural surfaces with impermeable material allows a high stormwater runoff ratio and increases both peak flows and total flow volume. Removal of topsoil which leaves mineral soil exposed also increases the rate of stormwater flow, which in turn creates more erosion (Reid 1993). Increased and eroding stormwater flows carry increased sediment load into drainages, which increases turbidity. When these processes are occurring at multiple sites, sediment load can increase turbidity such that water temperature can increase, which in turn decreases the level of dissolved oxygen, which can lead to increased stress or death of aquatic animals.

Polluted stormwater runoff could introduce petroleum products or pathogens, or otherwise alter water chemistry, including pH levels. Runoff from multiple sources could lead to water quality impacts that exceed water quality objective thresholds. In addition, some introduced chemicals can alter the mobility or chemical composition of chemicals already present, and may contribute to nutrient deficiencies or inhibit the ability of plants to make use of available nutrients. Introduced chemicals may be deposited within streams, and repeated addition of chemicals may cause a cumulative increase in concentration (Reid 1993).

When topography is altered for construction purposes, the change in natural contours can change local and downstream hydrology. Altered hydrology can decrease water availability to wetlands, which would impact in wetland plant populations and eventually create upland conditions. Altered hydrology can also modify the timing and amount of storm runoff, which could change base flows, peak flows, and flood seasonality. In response to these changes flood frequencies could change, stream channels could aggraded, incised, or widened, and the size distribution of streambed sediment would be modified (Reid 1993). These effects would not be limited to the physical environment, but would also affect wetland and riparian plant populations and aquatic animal populations. Changes in flood frequency and distribution could also affect human populations.

Impacts that are individually less than significant are cumulatively significant if they contribute incrementally to a cumulative impact that is already significant. For example, if a project results in sedimentation impacts that are less than significant on a project-level basis, the cumulative impact from sedimentation can be significant if the sediment is released into a stream that has not yet recovered from previous sedimentation impacts. Potential impacts to water resources resulting from construction and operation of the BRRTP may be less than significant; however, even with implementation of mitigation measures and GPs, they will have a cumulative effect on the watersheds in which they occur as they add to the impacts of past and contemporary projects, and as the impacts of future projects are added to them. While project-level mitigation measures and GPs are not sufficient to negate cumulative watershed effects, effectively implemented they are an important component of a broader watershed-scale approach to recovery from human activities.

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10.0 ABBREVIATIONS AND ACRONYMS

AC	Alternating Current
af	Acre feet
ANF	Angeles National Forest
AVEK	Antelope Valley – East Kern Water Agency
BLM	U.S. Department of the Interior, Bureau of Land Management
BMP	Best Management Practice
BR-RIN	Barren Ridge – Rinaldi Transmission Line
BRRTP	Barren Ridge Renewable Transmission Project
Cal-OSHA	California Occupational Safety and Health Administration
CCR	California Code of Regulations
CDFG	California Department of Fish & Game
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CDHS	California Department of Health Services
COM Plan	Construction, Operation and Maintenance Plan
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
DoD	Department of Defense
DWR	California Department of Water Resources
EIS / EIR	Environmental Impact Statement / Environmental Impact Report
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
GIS	geographic information system
HMBP	Hazardous Materials Business Plan
kcmil	circular mil
LADWP	Los Angeles Department of Water and Power
LACSD	Los Angeles County Sanitation District
mg/L	milligrams per liter
MM	Mitigation Measure
NAIP	National Agriculture Imagery Program
NEPA	National Environmental Policy Act
NFS	National Forest System
ng/L	nanograms per liter
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NTU	Nephelometric Turbidity Units
NWI	National Wetland Inventory
PDCI	Pacific Direct Current Intertie
PEM	Palustrine Emergent
PEMB	Palustrine Emergent Saturated
PFO	Palustrine Forested
PFOA	Palustrine Forested Temporarily Flooded
pg/L	picograms per liter
POD	Plan of Development
POWER	POWER Engineers, Inc.
PUB	Palustrine Unconsolidated Bottom
PUBFx	Palustrine Unconsolidated Bottom Permanently Flooded, Excavated
R2	Lower Perennial Riverine
R4	Intermittent Riverine

RCA	Riparian Conservation Area
ROW	right-of-way
RWQCB	Regional Water Quality Control Board
SCA	Special Conservation Area
SCE	Southern California Edison
SEA	Significant Ecological Area
SPCC Plan	Spill Prevention, Countermeasure and Control Plan
SSURGO	Soil Survey Geographic
SVOC	Semi-Volatile Organic Compounds
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
TRTP	Tehachapi Renewable Transmission Project
TSP	Tubular Steel Pole
USACE	U.S. Army Corps of Engineers
USFS	U.S. Department of Agriculture, Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	Volatile Organic Compound

APPENDIX A
IMPACT TABLES

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Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perrenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
A	6.6	6.7	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	6.7	6.8	0-10	1.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	6.8	6.9	0-10	1.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed (2)	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	6.9	7.0	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	7.0	7.1	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	7.1	7.2	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	7.2	7.3	0-10	1.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	7.3	7.4	0-10	2.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	7.4	7.5	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	7.5	7.6	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	7.6	7.7	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	7.7	7.8	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	7.8	7.9	0-10	1.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	7.9	8.0	0-10	1.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	8.0	8.1	0-10	1.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	8.1	8.2	0-10	1.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	8.2	8.3	0-10	2.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	8.3	8.4	0-10	1.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	8.4	8.5	0-10	1.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	8.5	8.6	0-10	1.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	8.6	8.7	0-10	1.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	8.7	8.8	0-10	1.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	8.8	8.9	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	8.9	9.0	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	9.0	9.1	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	9.1	9.2	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	9.2	9.3	0-10	1.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	9.3	9.4	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	9.4	9.5	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	9.5	9.6	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	9.6	9.7	0-10	1.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	9.7	9.8	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	9.8	9.9	0-10	1.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
A	9.9	10.0	0-10	1.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
A	10.0	10.1	0-10	1.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
A	10.1	10.2	0-10	1.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
A	10.2	10.3	0-10	1.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed (2)	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
A	10.3	10.4	0-10	2.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
A	10.4	10.5	0-10	1.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
A	10.5	10.6	0-10	1.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Cache Creek, Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
A	10.6	10.7	0-10	1.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	10.7	10.8	0-10	1.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	10.8	10.9	0-10	1.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed (2)	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	10.9	11.0	0-10	1.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	11.0	11.1	0-10	1.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	11.1	11.2	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	11.2	11.3	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	11.3	11.4	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed (2)	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	11.4	11.5	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	11.5	11.6	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	11.6	11.7	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed (2)	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	11.7	11.8	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed (2)	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	11.8	11.9	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	11.9	12.0	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	12.0	12.1	0-10	2.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	12.1	12.2	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	12.2	12.3	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	12.3	12.4	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed (2)	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	12.4	12.5	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	12.5	12.6	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	12.6	12.7	0-10	1.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perrenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
A	0.0	0.1	0-10	2.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	0.1	0.2	0-10	1.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	0.2	0.3	0-10	1.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	0.3	0.4	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	0.4	0.5	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	0.5	0.6	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	0.6	0.7	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed (Pine Tree Canyon), Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
A	0.7	0.8	0-10	1.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
A	0.8	0.9	0-10	2.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	0.9	1.0	0-10	4.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
A	1.0	1.1	0-10	6.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
A	1.1	1.2	0-10	8.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	1.2	1.3	10-20	6.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	1.3	1.4	0-10	1.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	1.4	1.5	0-10	1.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	1.5	1.6	0-10	1.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	1.6	1.7	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	1.7	1.8	0-10	1.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	1.8	1.9	0-10	1.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	1.9	2.0	0-10	2.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	2.0	2.1	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	2.1	2.2	0-10	1.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	2.2	2.3	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	2.3	2.4	0-10	2.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	2.4	2.5	0-10	4.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	2.5	2.6	0-10	2.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	2.6	2.7	0-10	3.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	2.7	2.8	0-10	3.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	2.8	2.9	0-10	2.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	2.9	3.0	0-10	1.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	3.0	3.1	0-10	1.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	3.1	3.2	0-10	2.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	3.2	3.3	0-10	1.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	3.3	3.4	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	3.4	3.5	0-10	2.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed (2)	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	3.5	3.6	0-10	2.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	3.6	3.7	0-10	1.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	3.7	3.8	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	3.8	3.9	0-10	1.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	3.9	4.0	0-10	2.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	4.0	4.1	0-10	1.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	4.1	4.2	0-10	2.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	4.2	4.3	0-10	1.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	4.3	4.4	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	4.4	4.5	0-10	1.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	4.5	4.6	0-10	2.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	4.6	4.7	0-10	2.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	4.7	4.8	0-10	1.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed (2)	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	4.8	4.9	0-10	1.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	4.9	5.0	0-10	2.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	5.0	5.1	0-10	1.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	5.1	5.2	0-10	1.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	5.2	5.3	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	5.3	5.4	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed (2)	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	5.4	5.5	0-10	1.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed (2)	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	5.5	5.6	0-10	1.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	5.6	5.7	0-10	2.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	5.7	5.8	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	5.8	5.9	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	5.9	6.0	0-10	1.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	6.0	6.1	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	6.1	6.2	0-10	2.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	6.2	6.3	0-10	1.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	6.3	6.4	0-10	1.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	6.4	6.5	0-10	1.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	6.5	6.6	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perrenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
A	12.7	12.8	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	12.8	12.9	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	12.9	13.0	0-10	1.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed (2)	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	13.0	13.1	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
A	13.1	13.2	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
A	13.2	13.2	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	0.0	0.1	0-10	1.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	0.1	0.2	0-10	1.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	0.2	0.3	0-10	1.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	0.3	0.4	0-10	2.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	0.4	0.5	0-10	2.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	0.5	0.6	0-10	1.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	0.6	0.7	0-10	2.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	0.7	0.8	0-10	1.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	0.8	0.9	0-10	2.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	0.9	1.0	0-10	2.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	1.0	1.1	0-10	1.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	1.1	1.2	0-10	2.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	1.2	1.3	0-10	2.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	1.3	1.4	0-10	1.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	1.4	1.5	0-10	2.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	1.5	1.6	0-10	1.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	1.6	1.7	0-10	2.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	1.7	1.8	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	1.8	1.9	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	1.9	2.0	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	2.0	2.1	0-10	2.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	2.1	2.2	0-10	1.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	2.2	2.3	0-10	2.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	2.3	2.4	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	2.4	2.5	0-10	1.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	2.5	2.6	0-10	2.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	2.6	2.7	0-10	1.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	2.7	2.8	0-10	1.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	2.8	2.9	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	2.9	3.0	0-10	1.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	3.0	3.1	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	3.1	3.2	0-10	1.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	3.2	3.3	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	3.3	3.4	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	3.4	3.5	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	3.5	3.6	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	3.6	3.7	0-10	1.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	3.7	3.8	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	3.8	3.9	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	3.9	4.0	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	4.0	4.1	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	4.1	4.2	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	4.2	4.3	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	4.3	4.4	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	4.4	4.5	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	4.5	4.6	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	4.6	4.7	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	4.7	4.8	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	4.8	4.9	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	4.9	5.0	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	5.0	5.1	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perrenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
B	5.1	5.2	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	5.2	5.3	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	5.3	5.4	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	5.4	5.5	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	5.5	5.6	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	5.6	5.7	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	5.7	5.8	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	5.8	5.9	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	5.9	6.0	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	6.0	6.1	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	6.1	6.2	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	6.2	6.3	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	6.3	6.4	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	6.4	6.5	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	6.5	6.6	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	6.6	6.7	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	6.7	6.8	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	6.8	6.9	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	6.9	7.0	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	7.0	7.1	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	7.1	7.2	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	7.2	7.3	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	7.3	7.4	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	7.4	7.5	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	7.5	7.6	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	7.6	7.7	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	7.7	7.8	0-10	1.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	7.8	7.9	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	7.9	8.0	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	8.0	8.1	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	8.1	8.2	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	8.2	8.3	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	8.3	8.4	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	8.4	8.5	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	8.5	8.6	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	8.6	8.7	0-10	1.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	8.7	8.8	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	8.8	8.9	0-10	1.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	8.9	9.0	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	9.0	9.1	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	9.1	9.2	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	9.2	9.3	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
B	9.3	9.4	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
B	9.4	9.5	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	9.5	9.6	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
B	9.6	9.7	0-10	2.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
B	9.7	9.8	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
B	9.8	9.9	0-10	1.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
B	9.9	10.0	0-10	1.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
B	10.0	10.1	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
B	10.1	10.2	0-10	1.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
B	10.2	10.3	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
B	10.3	10.4	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	10.4	10.5	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	10.5	10.6	0-10	1.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	10.6	10.7	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	10.7	10.8	0-10	1.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	10.8	10.9	0-10	1.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	10.9	11.0	0-10	1.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	11.0	11.1	0-10	1.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	11.1	11.2	0-10	1.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	11.2	11.3	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	11.3	11.4	0-10	2.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	11.4	11.5	0-10	1.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	11.5	11.6	0-10	1.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	11.6	11.7	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	11.7	11.8	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	11.8	11.9	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	11.9	12.0	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	12.0	12.1	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	12.1	12.2	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	12.2	12.3	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perrenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
B	12.3	12.4	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	12.4	12.5	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	12.5	12.6	0-10	0.5	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	12.6	12.7	0-10	0.5	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	12.7	12.8	0-10	1.9	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	12.8	12.9	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	12.9	13.0	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	13.0	13.1	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	13.1	13.2	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	13.2	13.3	0-10	1.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	13.3	13.4	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	13.4	13.5	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	13.5	13.6	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	13.6	13.7	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	13.7	13.8	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	13.8	13.9	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	13.9	14.0	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	14.0	14.1	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	14.1	14.2	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	14.2	14.3	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	14.3	14.4	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	14.4	14.5	0-10	1.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	14.5	14.6	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	14.6	14.7	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	14.7	14.8	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	14.8	14.9	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	14.9	15.0	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	15.0	15.1	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	15.1	15.2	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	15.2	15.3	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	15.3	15.4	0-10	5.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	15.4	15.5	0-10	4.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	15.5	15.6	0-10	3.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	15.6	15.7	0-10	6.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
B	15.7	15.8	0-10	6.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	15.8	15.9	0-10	2.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	15.9	16.0	0-10	1.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	16.0	16.1	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	16.1	16.2	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
B	16.2	16.3	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	16.3	16.4	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	16.4	16.5	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	16.5	16.6	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	16.6	16.7	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	16.7	16.8	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	16.8	16.9	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	16.9	17.0	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	17.0	17.1	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	17.1	17.2	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	17.2	17.3	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	17.3	17.4	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	17.4	17.5	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	17.5	17.6	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	17.6	17.7	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	17.7	17.8	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	17.8	17.9	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	17.9	18.0	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	18.0	18.1	0-10	0.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	18.1	18.2	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	18.2	18.3	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	18.3	18.4	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	18.4	18.5	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	18.5	18.6	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	18.6	18.7	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	18.7	18.8	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	18.8	18.9	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	18.9	19.0	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	19.0	19.1	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	19.1	19.2	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	19.2	19.3	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	19.3	19.4	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	19.4	19.5	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	19.5	19.6	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	19.6	19.7	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perennial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
B	19.7	19.8	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	19.8	19.9	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	19.9	20.0	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	20.0	20.1	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	20.1	20.2	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	20.2	20.3	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	20.3	20.4	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	20.4	20.5	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	20.5	20.6	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	20.6	20.7	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	20.7	20.8	0-10	0.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	20.8	20.9	0-10	0.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	20.9	21.0	0-10	0.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	21.0	21.1	0-10	0.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	21.1	21.2	0-10	0.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	21.2	21.3	0-10	0.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	21.3	21.4	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	21.4	21.5	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	21.5	21.6	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	21.6	21.7	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	21.7	21.8	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	21.8	21.9	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	21.9	22.0	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	22.0	22.1	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	22.1	22.2	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	22.2	22.3	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	22.3	22.4	0-10	0.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	22.4	22.5	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	22.5	22.6	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	22.6	22.7	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	22.7	22.8	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	22.8	22.9	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	22.9	23.0	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	23.0	23.1	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	23.1	23.2	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	23.2	23.3	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	23.3	23.4	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	23.4	23.5	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	23.5	23.6	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	23.6	23.7	0-10	0.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	23.7	23.8	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	23.8	23.9	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	23.9	24.0	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	24.0	24.1	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
B	24.1	24.2	0-10	1.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	N/A	NI
B	24.2	24.3	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	24.3	24.4	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	24.4	24.5	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	24.5	24.6	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	24.6	24.7	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	24.7	24.8	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	24.8	24.9	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	24.9	25.0	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	25.0	25.1	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	25.1	25.2	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	25.2	25.3	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	25.3	25.4	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	25.4	25.5	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	25.5	25.6	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	25.6	25.7	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	25.7	25.8	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	25.8	25.9	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	25.9	26.0	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	26.0	26.1	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	26.1	26.2	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	26.2	26.3	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	26.3	26.4	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
B	26.4	26.5	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
B	26.5	26.5	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
C	0.0	0.1	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	0.1	0.2	0-10	1.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	0.2	0.3	0-10	3.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	0.3	0.4	0-10	2.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	0.4	0.5	0-10	1.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	0.5	0.6	0-10	0.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	0.6	0.7	0-10	1.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	0.7	0.8	0-10	1.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perrenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
C	0.8	0.9	0-10	4.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	0.9	1.0	0-10	1.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	1.0	1.1	0-10	0.9	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	M	HYD-10, HYD-11	L
C	1.1	1.2	0-10	2.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	1.2	1.3	0-10	1.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed (2)	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	1.3	1.4	0-10	1.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	1.4	1.5	0-10	1.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	1.5	1.6	0-10	1.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	1.6	1.7	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed (2)	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	1.7	1.8	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	1.8	1.9	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	1.9	2.0	0-10	0.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	2.0	2.1	0-10	1.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	2.1	2.2	0-10	0.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	2.2	2.3	0-10	1.1	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	M	HYD-10, HYD-11	L
C	2.3	2.4	0-10	1.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	2.4	2.5	0-10	0.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	2.5	2.6	0-10	0.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	2.6	2.7	0-10	0.9	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	M	HYD-10, HYD-11	L
C	2.7	2.8	0-10	1.1	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	2.8	2.9	0-10	1.1	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	2.9	3.0	0-10	0.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	3.0	3.1	0-10	1.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	3.1	3.2	0-10	0.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	3.2	3.3	0-10	0.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	3.3	3.4	0-10	1.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	3.4	3.5	0-10	0.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	3.5	3.6	0-10	0.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	3.6	3.7	0-10	0.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	3.7	3.8	0-10	1.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	3.8	3.9	0-10	0.5	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	3.9	4.0	0-10	0.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	4.0	4.1	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	4.1	4.2	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	4.2	4.3	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	4.3	4.4	0-10	2.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	4.4	4.5	0-10	1.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	4.5	4.6	0-10	0.8	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	M	HYD-10, HYD-11	L
C	4.6	4.7	0-10	0.7	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	M	HYD-10, HYD-11	L

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
C	4.7	4.8	0-10	0.6	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	4.8	4.9	0-10	0.7	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	L
C	4.9	5.0	0-10	0.4	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	L
C	5.0	5.1	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	5.1	5.2	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	5.2	5.3	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	5.3	5.4	0-10	0.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	5.4	5.5	0-10	0.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	5.5	5.6	0-10	0.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	5.6	5.7	0-10	0.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	5.7	5.8	0-10	0.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	5.8	5.9	0-10	0.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
C	5.9	6.0	0-10	0.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
C	6.0	6.1	0-10	0.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
C	6.1	6.2	0-10	0.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
C	6.2	6.3	0-10	0.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
C	6.3	6.4	0-10	0.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
C	6.4	6.5	0-10	0.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
C	6.5	6.6	0-10	0.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
C	6.6	6.7	0-10	0.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
C	6.7	6.8	0-10	0.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
C	6.8	6.9	0-10	0.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
C	6.9	7.0	0-10	0.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
C	7.0	7.1	0-10	0.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
C	7.1	7.2	0-10	0.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
C	7.2	7.3	0-10	0.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
C	7.3	7.4	0-10	0.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
C	7.4	7.5	0-10	0.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
C	7.5	7.6	0-10	0.2	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	L
C	7.6	7.7	0-10	0.2	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	L
C	7.7	7.8	0-10	0.4	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
C	7.8	7.9	0-10	0.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
C	7.9	8.0	0-10	0.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
C	8.0	8.1	0-10	0.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
C	8.1	8.2	0-10	0.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
C	8.2	8.3	0-10	0.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
C	8.3	8.4	0-10	0.2	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	L
C	8.4	8.5	0-10	0.3	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	L
C	8.5	8.6	0-10	0.3	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	L
C	8.6	8.7	0-10	0.4	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	8.7	8.8	0-10	0.5	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	8.8	8.9	0-10	0.3	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	8.9	9.0	0-10	0.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed (Oak Creek)	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
C	9.0	9.1	0-10	0.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	9.1	9.2	0-10	0.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	9.2	9.3	0-10	0.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	9.3	9.4	0-10	0.3	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	9.4	9.5	0-10	0.6	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	9.5	9.6	0-10	0.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	9.6	9.7	0-10	0.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	9.7	9.8	0-10	0.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	9.8	9.9	0-10	0.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	9.9	10.0	0-10	1.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	10.0	10.1	0-10	0.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	10.1	10.2	0-10	1.0	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	10.2	10.3	0-10	1.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	10.3	10.4	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	10.4	10.5	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	10.5	10.6	0-10	0.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	10.6	10.7	0-10	0.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	10.7	10.8	0-10	0.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	10.8	10.9	0-10	0.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	10.9	11.0	0-10	1.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	11.0	11.1	0-10	0.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	11.1	11.2	0-10	1.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	11.2	11.3	0-10	0.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	11.3	11.4	0-10	0.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	11.4	11.5	0-10	0.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	11.5	11.6	0-10	0.4	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	11.6	11.7	0-10	0.5	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	11.7	11.8	0-10	0.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	11.8	11.9	0-10	0.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	11.9	12.0	0-10	0.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	12.0	12.1	0-10	0.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	12.1	12.2	0-10	1.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	12.2	12.3	0-10	0.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	12.3	12.4	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	12.4	12.5	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	12.5	12.6	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perrenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
C	12.6	12.7	0-10	0.6	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	12.7	12.8	0-10	0.5	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	12.8	12.9	0-10	0.6	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	12.9	13.0	0-10	0.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	13.0	13.1	0-10	1.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	13.1	13.2	0-10	0.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	13.2	13.3	0-10	1.0	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	M	HYD-10, HYD-11	L
C	13.3	13.4	0-10	0.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	13.4	13.5	0-10	0.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	13.5	13.6	0-10	0.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	13.6	13.7	0-10	0.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	13.7	13.8	0-10	0.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	13.8	13.9	0-10	0.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	13.9	14.0	0-10	0.4	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	14.0	14.1	0-10	0.6	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	14.1	14.2	0-10	0.3	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	14.2	14.3	0-10	0.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	14.3	14.4	0-10	1.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	14.4	14.5	0-10	1.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	14.5	14.6	0-10	1.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	14.6	14.7	0-10	1.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	14.7	14.8	0-10	1.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	14.8	14.9	0-10	0.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	14.9	15.0	0-10	0.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	15.0	15.1	0-10	0.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	15.1	15.2	0-10	0.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	15.2	15.3	0-10	0.3	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	15.3	15.4	0-10	0.4	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	15.4	15.5	0-10	1.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	15.5	15.6	0-10	0.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	15.6	15.7	0-10	1.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	15.7	15.8	0-10	1.6	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	15.8	15.9	0-10	1.4	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	M	HYD-10, HYD-11	L
C	15.9	16.0	0-10	1.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	16.0	16.1	0-10	1.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	16.1	16.2	0-10	1.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	16.2	16.3	0-10	0.9	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	16.3	16.4	0-10	0.7	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	M	HYD-10, HYD-11	L
C	16.4	16.5	0-10	0.6	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	16.5	16.6	0-10	0.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	16.6	16.7	0-10	1.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	16.7	16.8	0-10	1.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perrenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
C	16.8	16.9	0-10	1.0	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	16.9	17.0	0-10	0.3	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	17.0	17.1	0-10	1.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	17.1	17.2	0-10	0.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	17.2	17.3	0-10	0.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	17.3	17.4	0-10	1.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	17.4	17.5	0-10	1.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	17.5	17.6	0-10	0.8	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	17.6	17.7	0-10	1.5	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	17.7	17.8	0-10	1.2	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	Unnamed	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
C	17.8	17.9	0-10	1.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	17.9	18.0	0-10	1.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	18.0	18.1	0-10	1.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	First Los Angeles Aquduct	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	18.1	18.2	0-10	2.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	18.2	18.3	0-10	1.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	18.3	18.4	0-10	1.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	18.4	18.5	0-10	0.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	18.5	18.6	0-10	1.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	18.6	18.7	0-10	1.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	18.7	18.8	0-10	2.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	18.8	18.9	0-10	1.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
C	18.9	19.0	0-10	2.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
C	19.0	19.1	0-10	1.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
C	19.1	19.2	0-10	2.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
C	19.2	19.3	0-10	1.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
C	19.3	19.4	0-10	2.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	19.4	19.5	0-10	1.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	19.5	19.6	0-10	2.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
C	19.6	19.7	0-10	1.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
C	19.7	19.8	0-10	2.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	19.8	19.9	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	19.9	20.0	0-10	1.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	20.0	20.1	0-10	1.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	20.1	20.2	0-10	3.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
C	20.2	20.3	0-10	1.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Cottonwood Creek	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
C	20.3	20.4	0-10	2.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
C	20.4	20.5	0-10	2.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	20.5	20.6	0-10	1.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
C	20.6	20.7	0-10	1.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI		NI
C	20.7	20.8	0-10	1.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI		NI
C	20.8	20.9	0-10	1.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
C	20.9	21.0	0-10	2.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
C	21.0	21.1	0-10	2.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
C	21.1	21.2	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
C	21.2	21.3	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
C	21.3	21.4	0-10	1.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
C	21.4	21.5	0-10	1.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	BIO-9, HYD-1, HYD-2	NI

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
C	21.5	21.6	0-10	1.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
C	21.6	21.7	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	0.0	0.1	0-10	2.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	0.1	0.2	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	0.2	0.3	0-10	1.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI		NI
D	0.3	0.4	0-10	2.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	0.4	0.5	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI		NI
D	0.5	0.6	0-10	2.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	0.6	0.7	0-10	1.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI		NI
D	0.7	0.8	0-10	2.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI		NI
D	0.8	0.9	0-10	2.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	0.9	1.0	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI		NI
D	1.0	1.1	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI		NI
D	1.1	1.2	0-10	1.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	1.2	1.3	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI		NI
D	1.3	1.4	0-10	1.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	1.4	1.5	0-10	2.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	1.5	1.6	0-10	2.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI		NI
D	1.6	1.7	0-10	3.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	1.7	1.8	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI		NI
D	1.8	1.9	0-10	1.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	1.9	2.0	0-10	2.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	2.0	2.1	0-10	2.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	2.1	2.2	0-10	1.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	2.2	2.3	0-10	3.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI		NI
D	2.3	2.4	0-10	2.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	2.4	2.5	0-10	2.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	2.5	2.6	0-10	3.7	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	2.6	2.7	0-10	2.1	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	2.7	2.8	0-10	0.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	2.8	2.9	0-10	0.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	2.9	3.0	0-10	2.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	3.0	3.1	0-10	1.0	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	3.1	3.2	0-10	1.5	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	M	N/A	L
D	3.2	3.3	0-10	1.2	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	M	N/A	L
D	3.3	3.4	0-10	3.2	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	3.4	3.5	0-10	0.2	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	3.5	3.6	0-10	1.8	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	3.6	3.7	0-10	1.7	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	3.7	3.8	0-10	1.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	3.8	3.9	0-10	2.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	3.9	4.0	0-10	3.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	4.0	4.1	0-10	1.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
D	4.1	4.2	0-10	0.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
D	4.2	4.3	0-10	0.1	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	M	N/A	L
D	4.3	4.4	0-10	0.8	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	M	N/A	L
D	4.4	4.5	0-10	2.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
D	4.5	4.6	0-10	1.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	4.6	4.7	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	4.7	4.8	0-10	1.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	4.8	4.9	0-10	1.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	4.9	5.0	0-10	1.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	5.0	5.1	0-10	1.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	5.1	5.2	0-10	1.3	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	5.2	5.3	0-10	1.1	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	5.3	5.4	0-10	1.4	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	5.4	5.5	0-10	1.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	5.5	5.6	0-10	3.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	5.6	5.7	0-10	2.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	5.7	5.8	0-10	2.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	5.8	5.9	0-10	2.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	5.9	6.0	0-10	2.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	6.0	6.1	0-10	3.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	6.1	6.2	0-10	3.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	6.2	6.3	0-10	2.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	6.3	6.4	0-10	2.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	6.4	6.5	0-10	1.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	6.5	6.6	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	6.6	6.7	0-10	1.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	6.7	6.8	0-10	1.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	6.8	6.9	0-10	1.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
D	6.9	7.0	0-10	1.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	7.0	7.1	0-10	1.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	7.1	7.2	0-10	1.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	7.2	7.3	0-10	1.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	7.3	7.4	0-10	1.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	7.4	7.5	0-10	2.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	7.5	7.6	0-10	2.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	7.6	7.7	0-10	0.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	7.7	7.8	0-10	0.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	7.8	7.9	0-10	0.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	7.9	8.0	0-10	1.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
D	8.0	8.1	0-10	1.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
D	8.1	8.2	0-10	1.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
D	8.2	8.3	0-10	2.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
D	8.3	8.4	0-10	0.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
D	8.4	8.5	0-10	0.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
D	8.5	8.6	0-10	1.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
D	8.6	8.7	0-10	0.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
D	8.7	8.8	0-10	2.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	8.8	8.9	0-10	0.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	8.9	9.0	0-10	0.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	9.0	9.1	0-10	1.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	9.1	9.2	0-10	1.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	9.2	9.3	0-10	1.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	9.3	9.4	0-10	1.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
D	9.4	9.5	0-10	2.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	Los Angeles Aqueduct	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	9.5	9.6	0-10	2.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
D	9.6	9.7	0-10	3.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
D	9.7	9.8	0-10	2.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
D	9.8	9.9	0-10	2.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
D	9.9	10.0	0-10	1.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	10.0	10.1	0-10	3.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
D	10.1	10.2	0-10	4.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
D	10.2	10.3	0-10	2.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
D	10.3	10.4	0-10	2.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
D	10.4	10.5	0-10	1.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	10.5	10.6	0-10	3.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	10.6	10.7	0-10	1.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
D	10.7	10.8	0-10	2.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
D	10.8	10.9	0-10	4.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
D	10.9	11.0	0-10	0.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
D	11.0	11.1	0-10	0.5	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	M	HYD-10, HYD-11	L
D	11.1	11.2	0-10	0.3	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	Yes	NA	None	None	None	Partially Hydric	Yes	M	HYD-10, HYD-11	L
D	11.2	11.3	0-10	0.6	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	M	HYD-10, HYD-11	L
D	11.3	11.4	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
D	11.4	11.5	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
D	11.5	11.6	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
D	11.6	11.7	0-10	1.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	11.7	11.8	0-10	1.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	11.8	11.9	0-10	1.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	11.9	12.0	0-10	1.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	12.0	12.1	0-10	1.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	12.1	12.2	0-10	1.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	12.2	12.3	0-10	1.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	12.3	12.4	0-10	1.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	12.4	12.5	0-10	1.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	12.5	12.6	0-10	1.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	R2UBKHrx	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	12.6	12.7	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	R2UBKHrx	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	12.7	12.8	0-10	0.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	R2UBKHrx	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	12.8	12.9	0-10	0.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	R2UBKHrx	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	12.9	13.0	0-10	0.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	R2UBKHrx	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	13.0	13.1	0-10	0.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	R2UBKHrx	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	13.1	13.2	0-10	0.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	R2UBKHrx	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	13.2	13.3	0-10	0.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	R2UBKHrx	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	13.3	13.4	0-10	0.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	R2UBKHrx	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	13.4	13.5	0-10	0.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	R2UBKHrx	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	13.5	13.6	0-10	0.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	R2UBKHrx	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	13.6	13.7	0-10	1.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	California Aqueduct	None	NA	None	None	R2UBKHrx	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
D	13.7	13.8	0-10	1.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-10, HYD-11	NI
D	13.8	13.9	0-10	1.1	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	Yes	M	HYD-10, HYD-11	L
D	13.9	14.0	0-10	2.0	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	14.0	14.1	0-10	1.8	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perrenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
D	14.1	14.2	0-10	1.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	14.2	14.3	0-10	1.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	14.3	14.4	0-10	1.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	14.4	14.5	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	14.5	14.6	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	14.6	14.7	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	14.7	14.8	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	14.8	14.9	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	14.9	15.0	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	15.0	15.1	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	15.1	15.2	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	15.2	15.3	0-10	1.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	15.3	15.4	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	15.4	15.5	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	15.5	15.6	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed (Cow Spring Canyon)	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
D	15.6	15.7	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed (Cow Spring Canyon)	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
D	15.7	15.8	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	15.8	15.9	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	15.9	16.0	0-10	1.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	16.0	16.1	0-10	2.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	16.1	16.2	0-10	1.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	16.2	16.3	0-10	1.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	16.3	16.4	0-10	0.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	16.4	16.5	20-30	4.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	16.5	16.6	20-30	1.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed (Horsecamp Canyon)	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
D	16.6	16.7	0-10	0.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	16.7	16.8	0-10	2.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	16.8	16.9	10-20	6.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	16.9	17.0	10-20	9.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
D	17.0	17.1	10-20	6.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
D	17.1	17.2	10-20	6.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
D	17.2	17.3	10-20	2.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	17.3	17.4	10-20	5.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	17.4	17.5	10-20	16.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	17.5	17.6	20-30	21.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	17.6	17.7	10-20	3.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed (Tentrock Canyon)	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
D	17.7	17.8	10-20	6.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	17.8	17.9	10-20	5.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	17.9	18.0	10-20	3.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	18.0	18.1	0-10	3.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed (2)	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
D	18.1	18.2	0-10	2.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
D	18.2	18.3	0-10	2.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	18.3	18.4	0-10	1.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	18.4	18.5	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perennial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
D	18.5	18.6	0-10	1.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
D	18.6	18.7	0-10	1.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	18.7	18.8	0-10	2.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	18.8	18.9	0-10	4.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	18.9	19.0	0-10	7.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	19.0	19.1	0-10	5.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed (2)	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
D	19.1	19.2	0-10	2.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
D	19.2	19.3	10-20	11.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	19.3	19.4	10-20	13.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	19.4	19.5	10-20	6.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	19.5	19.6	0-10	2.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	19.6	19.7	0-10	2.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	19.7	19.8	0-10	2.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
D	19.8	19.9	0-10	4.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
D	19.9	20.0	0-10	3.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
D	20.0	20.1	0-10	2.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	20.1	20.2	0-10	2.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	20.2	20.3	0-10	2.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
D	20.3	20.4	0-10	2.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
D	20.4	20.5	0-10	5.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	20.5	20.6	10-20	6.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
D	20.6	20.7	10-20	9.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
D	20.7	20.8	20-30	12.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206-Ant.-Fremont Vlys;18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	20.8	20.9	20-30	4.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206-Ant.-Fremont Vlys;18070102-Santa Clara	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
D	20.9	21.0	20-30	22.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
D	21.0	21.1	20-30	22.4	None	4	Steel Lattice	0.724	0.724	0.56	0.85	18070102-Santa Clara	None	Unnamed (2)	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	21.1	21.2	20-30	33.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	21.2	21.3	>30	15.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	21.3	21.4	>30	6.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	21.4	21.5	20-30	18.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	21.5	21.6	>30	20.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
D	21.6	21.7	>30	24.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	21.7	21.8	20-30	29.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
D	21.8	21.9	10-20	11.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	21.9	22.0	20-30	12.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	22.0	22.1	20-30	10.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	22.1	22.2	20-30	6.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	22.2	22.3	20-30	4.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	22.3	22.4	10-20	2.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perrenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
D	22.4	22.5	10-20	12.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	22.5	22.6	10-20	18.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
D	22.6	22.7	>30	23.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
D	22.7	22.8	>30	10.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
D	22.8	22.9	>30	42.9	None	5	Steel Lattice	0.724	0.724	0.85	1.24	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	H	N/A	M
D	22.9	23.0	20-30	12.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
D	23.0	23.1	20-30	17.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
D	23.1	23.2	20-30	17.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Partially Hydric	No	NI	N/A	NI
D	23.2	23.3	20-30	37.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Partially Hydric	No	NI	N/A	NI
D	23.3	23.4	20-30	18.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	23.4	23.5	20-30	25.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
D	23.5	23.6	20-30	27.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
D	23.6	23.7	>30	33.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Partially Hydric	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
D	23.7	23.8	10-20	17.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Partially Hydric	No	NI		NI
D	23.8	23.9	10-20	19.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (West Fork Liebre Gulch)	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	23.9	24.0	20-30	12.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (West Fork Liebre Gulch)	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	24.0	24.1	20-30	19.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (West Fork Liebre Gulch)	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	24.1	24.2	20-30	23.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	24.2	24.3	20-30	31.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	24.3	24.4	>30	44.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	24.4	24.5	>30	28.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	24.5	24.6	>30	28.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	24.6	24.7	>30	49.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	24.7	24.8	>30	41.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	24.8	24.9	20-30	29.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	24.9	25.0	>30	46.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	25.0	25.1	>30	16.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	25.1	25.2	>30	36.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	25.2	25.3	>30	23.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	25.3	25.4	>30	31.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	25.4	25.5	20-30	27.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	25.5	25.6	20-30	21.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	25.6	25.7	20-30	8.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	25.7	25.8	20-30	36.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	25.8	25.9	>30	31.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	25.9	26.0	>30	35.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	26.0	26.1	>30	28.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	26.1	26.2	>30	26.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	26.2	26.3	20-30	21.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	26.3	26.4	20-30	23.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	26.4	26.5	>30	16.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	26.5	26.6	>30	32.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	SWC	None	None	Unknown	No	M	N/A	L
D	26.6	26.7	>30	43.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (West Fork Liebre Gulch)	None	None	Yes	SWC	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	26.7	26.8	>30	19.8	None	6	Steel Lattice	0.724	0.724	1.24	1.63	18070102-Santa Clara	None	Unnamed (West Fork Liebre Gulch)	None	None	Yes	SWC	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
D	26.8	26.9	>30	34.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (West Fork Liebre Gulch), Unnamed	None	None	Yes	SWC	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	26.9	27.0	20-30	11.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	Yes	SWC	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
D	27.0	27.1	20-30	25.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	27.1	27.2	20-30	25.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	27.2	27.3	20-30	12.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	27.3	27.4	20-30	9.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	27.4	27.5	>30	25.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	27.5	27.6	>30	41.7	None	6	Steel Lattice	0.724	0.724	1.24	1.63	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
D	27.6	27.7	20-30	21.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	27.7	27.8	10-20	23.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	27.8	27.9	20-30	28.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	27.9	28.0	>30	16.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	28.0	28.1	>30	28.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
D	28.1	28.2	>30	35.9	None	6	Steel Lattice	0.724	0.724	1.24	1.63	18070102-Santa Clara	None	Unnamed (Trough Canyon)	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
D	28.2	28.3	>30	14.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	28.3	28.4	>30	13.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	28.4	28.5	>30	13.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	28.5	28.6	>30	30.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	28.6	28.7	>30	16.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	28.7	28.8	>30	23.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	28.8	28.9	>30	37.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	28.9	29.0	>30	16.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	29.0	29.1	>30	23.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
D	29.1	29.2	>30	29.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	29.2	29.3	20-30	28.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	29.3	29.4	>30	25.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	29.4	29.5	>30	28.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Posey Canyon)	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	29.5	29.6	20-30	36.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	29.6	29.7	20-30	16.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	29.7	29.8	>30	35.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	29.8	29.9	>30	17.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	29.9	30.0	>30	41.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	30.0	30.1	20-30	9.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	30.1	30.2	20-30	25.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	30.2	30.3	>30	32.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	30.3	30.4	>30	28.4	None	5	Steel Lattice	0.724	0.724	0.85	1.24	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
D	30.4	30.5	20-30	22.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	30.5	30.6	20-30	17.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	30.6	30.7	20-30	15.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	30.7	30.8	20-30	23.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	30.8	30.9	>30	30.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	30.9	31.0	>30	26.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
D	31.0	31.1	>30	23.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	31.1	31.2	>30	12.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	31.2	31.3	>30	18.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	31.3	31.4	20-30	13.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	31.4	31.5	20-30	12.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	31.5	31.6	20-30	31.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	31.6	31.7	20-30	28.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	31.7	31.8	20-30	30.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	31.8	31.9	20-30	22.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	31.9	32.0	20-30	12.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	32.0	32.1	20-30	12.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	32.1	32.2	20-30	12.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	32.2	32.3	20-30	14.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	32.3	32.4	20-30	20.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	32.4	32.5	20-30	11.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	32.5	32.6	20-30	21.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	32.6	32.7	20-30	5.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	32.7	32.8	20-30	23.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	32.8	32.9	20-30	15.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
D	32.9	33.0	10-20	23.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	33.0	33.1	10-20	9.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	33.1	33.2	10-20	19.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	33.2	33.3	10-20	14.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	33.3	33.4	10-20	6.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	33.4	33.5	10-20	12.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	33.5	33.6	20-30	19.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	California Aqueduct(Angeles Tunnel)	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	33.6	33.7	10-20	20.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	33.7	33.8	20-30	19.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	33.8	33.9	20-30	17.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	33.9	34.0	>30	40.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	34.0	34.1	>30	30.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	34.1	34.2	20-30	25.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	34.2	34.3	20-30	37.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	34.3	34.4	20-30	21.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perrenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
D	34.4	34.5	>30	20.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	34.5	34.6	>30	15.4	None	5	Steel Lattice	0.724	0.724	0.85	1.24	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	34.6	34.7	20-30	21.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	34.7	34.8	20-30	3.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Big Oak Flat)	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	34.8	34.9	10-20	13.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Big Oak Flat)	None	None	NA	None	None	None	Unknown	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	34.9	35.0	20-30	16.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Unknown	No	NI	N/A	NI
D	35.0	35.1	10-20	24.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	VOW	None	None	Unknown	No	M	N/A	L
D	35.1	35.2	10-20	7.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	VOW	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	L
D	35.2	35.3	0-10	2.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	VOW	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	L
D	35.3	35.4	10-20	4.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	VOW	None	None	Unknown	No	M	N/A	L
D	35.4	35.5	10-20	8.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	VOW	None	None	Unknown	No	M	N/A	L
D	35.5	35.6	10-20	10.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Unknown	No	NI	N/A	NI
D	35.6	35.7	10-20	10.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Unknown	No	NI	N/A	NI
D	35.7	35.8	10-20	7.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	35.8	35.9	20-30	10.1	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	35.9	36.0	20-30	26.1	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	Unnamed(Canton Canyon)	None	None	NA	VOW	None	None	Unknown	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	36.0	36.1	10-20	13.5	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	Unnamed (Canton Canyon)	None	None	NA	VOW	None	None	Unknown	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	36.1	36.2	20-30	14.4	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	36.2	36.3	20-30	20.5	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	36.3	36.4	10-20	13.3	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	36.4	36.5	10-20	11.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	36.5	36.6	>30	37.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
D	36.6	36.7	>30	35.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Violin Canyon)	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	36.7	36.8	20-30	20.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	36.8	36.9	20-30	24.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	36.9	37.0	>30	16.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	37.0	37.1	>30	23.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	37.1	37.2	20-30	20.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	37.2	37.3	20-30	31.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Partially hydric	No	NI	N/A	NI
D	37.3	37.4	>30	34.0	None	6	Steel Lattice	0.724	0.724	1.24	1.63	18070102-Santa Clara	None	None	None	None	No	None	None	None	Partially hydric	No	H	N/A	M
D	37.4	37.5	20-30	18.6	None	5	Steel Lattice	0.724	0.724	0.85	1.24	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	H	N/A	M
D	37.5	37.6	>30	27.1	None	6	Steel Lattice	0.724	0.724	1.24	1.63	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	H	N/A	M
D	37.6	37.7	20-30	22.3	None	5	Steel Lattice	0.724	0.724	0.85	1.24	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	H	N/A	M
D	37.7	37.8	>30	25.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Marple Canyon)	None	None	NA	None	None	None	Partially hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	37.8	37.9	20-30	17.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Marple Canyon)	None	None	NA	None	None	None	Partially hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	37.9	38.0	20-30	19.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	38.0	38.1	10-20	11.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	38.1	38.2	10-20	12.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	38.2	38.3	10-20	10.5	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	38.3	38.4	10-20	8.8	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	38.4	38.5	10-20	9.2	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	38.5	38.6	20-30	15.5	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	38.6	38.7	20-30	4.7	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	38.7	38.8	>30	10.0	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	38.8	38.9	>30	34.7	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	38.9	39.0	>30	13.4	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	39.0	39.1	>30	21.8	None	6	Steel Lattice	0.724	0.724	1.24	1.63	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	H	N/A	M
D	39.1	39.2	>30	51.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Grasshopper Canyon)	None	None	NA	None	None	None	Partially hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	39.2	39.3	20-30	20.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Grasshopper Canyon)	None	None	NA	None	None	None	Partially hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	39.3	39.4	20-30	17.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	39.4	39.5	20-30	19.8	None	5	Steel Lattice	0.724	0.724	0.85	1.24	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	H	N/A	M
D	39.5	39.6	20-30	21.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	39.6	39.7	20-30	14.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	39.7	39.8	10-20	11.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	39.8	39.9	10-20	8.2	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	39.9	40.0	20-30	14.1	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	40.0	40.1	20-30	23.3	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	40.1	40.2	20-30	10.5	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	40.2	40.3	10-20	12.4	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	40.3	40.4	10-20	6.6	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	40.4	40.5	10-20	7.6	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	40.5	40.6	10-20	24.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	40.6	40.7	20-30	22.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	40.7	40.8	20-30	18.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Partially hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	40.8	40.9	20-30	6.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Partially hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	40.9	41.0	20-30	16.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (2)	None	None	NA	None	None	None	Partially hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	41.0	41.1	20-30	11.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Partially hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	41.1	41.2	20-30	14.2	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Partially hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	41.2	41.3	20-30	6.7	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Partially hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	41.3	41.4	20-30	9.4	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Partially hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perrenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
D	41.4	41.5	20-30	15.7	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Partially hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	41.5	41.6	20-30	13.2	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	HYD-12	NI
D	41.6	41.7	10-20	20.6	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	Castaic Spillway	None	NA	None	None	None	Partially hydric	Yes	NI	HYD-10, HYD-11, HYD-12	NI
D	41.7	41.8	20-30	20.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	Castaic Spillway	None	NA	None	None	None	Partially hydric	Yes	NI	HYD-10, HYD-11, HYD-12	NI
D	41.8	41.9	20-30	28.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	HYD-12	NI
D	41.9	42.0	20-30	25.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	HYD-12	NI
D	42.0	42.1	10-20	9.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	HYD-12	NI
D	42.1	42.2	0-10	1.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	HYD-12	NI
D	42.2	42.3	0-10	1.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	HYD-12	NI
D	42.3	42.4	20-30	18.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	HYD-12	NI
D	42.4	42.5	20-30	14.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	HYD-12	NI
D	42.5	42.6	10-20	20.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	HYD-12	NI
D	42.6	42.7	10-20	21.3	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	42.7	42.8	10-20	12.9	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	42.8	42.9	10-20	22.6	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	42.9	43.0	10-20	13.7	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	43.0	43.1	10-20	26.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	43.1	43.2	20-30	12.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Partially hydric	No	NI	N/A	NI
D	43.2	43.3	20-30	20.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Partially hydric	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	43.3	43.4	>30	15.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	43.4	43.5	20-30	20.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	43.5	43.6	20-30	26.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	43.6	43.7	20-30	29.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	43.7	43.8	20-30	21.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Partially hydric	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
D	43.8	43.9	>30	33.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Bitter Canyon)	None	None	Yes	None	None	None	Partially hydric	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	43.9	44.0	>30	20.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	44.0	44.1	20-30	22.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	44.1	44.2	20-30	37.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	44.2	44.3	>30	47.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	44.3	44.4	20-30	36.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	44.4	44.5	10-20	17.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	44.5	44.6	10-20	15.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	44.6	44.7	20-30	17.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Charlie Canyon)	None	None	Yes	SCWRF	None	None	Partially hydric	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	44.7	44.8	>30	33.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Charlie Canyon)	None	None	Yes	SCWRF	None	None	Partially hydric	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	44.8	44.9	>30	43.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	44.9	45.0	10-20	13.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	45.0	45.1	20-30	21.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Not Hydric	No	NI	N/A	NI
D	45.1	45.2	20-30	31.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Partially hydric	No	NI	N/A	NI
D	45.2	45.3	20-30	8.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	No	None	None	None	Partially hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	45.3	45.4	10-20	17.3	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
D	45.4	45.5	20-30	18.9	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	45.5	45.6	20-30	12.1	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	45.6	45.7	>30	40.3	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	45.7	45.8	>30	32.1	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	45.8	45.9	20-30	16.1	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially hydric	No	NI	N/A	NI
D	45.9	46.0	20-30	18.4	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	46.0	46.1	20-30	23.4	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
D	46.1	46.2	20-30	16.9	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	San Francisquito Canyon	None	None	NA	None	Santa Clara River SEA (DRAFt '08)	None	Partially hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8, HYD-10, HYD-11	NI
D	46.2	46.3	0-10	3.8	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	San Francisquito Canyon	None	None	NA	None	Santa Clara River SEA (DRAFt '08)	None	Partially hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8, HYD-10, HYD-11	NI
D	46.3	46.4	10-20	15.2	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	NA	None	Santa Clara River SEA (DRAFt '08)	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	46.4	46.5	10-20	12.5	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Partially hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
D	46.5	46.6	20-30	29.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Partially hydric	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
D	46.6	46.7	20-30	22.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
D	46.7	46.8	>30	35.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
D	46.8	46.9	20-30	25.6	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	Los Angeles Aqueduct (Tunnel)	None	No	SCLORF	None	None	Unknown	No	NI	N/A	NI
D	46.9	47.0	20-30	13.1	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	Unnamed (Dry Canyon)	Los Angeles Aqueduct (Tunnel)	None	Yes	SCLORF	None	None	Unknown	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
D	47.0	47.1	20-30	30.0	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	No	SCLORF	None	None	Unknown	No	NI	N/A	NI
D	47.1	47.2	20-30	14.1	Use	1	Steel Lattice	0.584	0.584	0.008	0.008	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	47.2	47.3	20-30	11.0	None	5	Steel Lattice	0.724	0.724	0.85	1.24	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	47.3	47.4	>30	32.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perrenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
D	47.4	47.5	>30	36.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	47.5	47.6	20-30	22.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	47.6	47.7	>30	35.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	47.7	47.8	20-30	15.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
D	47.8	47.9	>30	16.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
D	47.9	48.0	>30	24.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	Yes	SSARW	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	48.0	48.1	>30	22.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	Yes	SSARW	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
D	48.1	48.2	20-30	5.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	SSARW	None	None	Unknown	No	M	N/A	L
E	0.0	0.1	0-10	4.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
E	0.1	0.2	0-10	4.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
E	0.2	0.3	0-10	3.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
E	0.3	0.4	0-10	3.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
E	0.4	0.5	0-10	2.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
E	0.5	0.6	0-10	2.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
E	0.6	0.7	0-10	2.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
E	0.7	0.8	0-10	2.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
E	0.8	0.9	0-10	2.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
E	0.9	1.0	0-10	1.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	1.0	1.1	0-10	1.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	1.1	1.2	0-10	1.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	1.2	1.3	0-10	1.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	1.3	1.4	0-10	1.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	1.4	1.5	0-10	0.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	1.5	1.6	0-10	1.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	1.6	1.7	0-10	0.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
E	1.7	1.8	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
E	1.8	1.9	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
E	1.9	2.0	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
E	2.0	2.1	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
E	2.1	2.2	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
E	2.2	2.3	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
E	2.3	2.4	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
E	2.4	2.5	0-10	0.7	None - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
E	2.5	2.6	0-10	0.7	None - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
E	2.6	2.7	0-10	0.7	None - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
E	2.7	2.8	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
E	2.8	2.9	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
E	2.9	3.0	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
E	3.0	3.1	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
E	3.1	3.2	0-10	0.5	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
E	3.2	3.3	0-10	0.6	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
E	3.3	3.4	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
E	3.4	3.5	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
E	3.5	3.6	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
E	3.6	3.7	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
E	3.7	3.8	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
E	3.8	3.9	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
E	3.9	4.0	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
E	4.0	4.1	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
E	4.1	4.2	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
E	4.2	4.3	0-10	0.4	None - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	4.3	4.4	0-10	0.4	None - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	4.4	4.5	0-10	0.3	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	4.5	4.6	0-10	0.3	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	4.6	4.7	0-10	0.4	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	4.7	4.8	0-10	0.3	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	4.8	4.9	0-10	0.4	None - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	4.9	5.0	0-10	0.4	None - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	5.0	5.1	0-10	0.3	None - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	5.1	5.2	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	5.2	5.3	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	5.3	5.4	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	5.4	5.5	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	5.5	5.6	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	5.6	5.7	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	5.7	5.8	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	5.8	5.9	0-10	0.3	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	Joshua Tree Woodlands SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	5.9	6.0	0-10	0.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	Joshua Tree Woodlands SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	6.0	6.1	0-10	0.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	Joshua Tree Woodlands SEA	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
E	6.1	6.2	0-10	0.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	Joshua Tree Woodlands SEA	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
E	6.2	6.3	0-10	0.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	Joshua Tree Woodlands SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	6.3	6.4	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	Joshua Tree Woodlands SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	6.4	6.5	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	Joshua Tree Woodlands SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	6.5	6.6	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	Joshua Tree Woodlands SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	6.6	6.7	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	Joshua Tree Woodlands SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	6.7	6.8	0-10	0.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	Joshua Tree Woodlands SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	6.8	6.9	0-10	0.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	Joshua Tree Woodlands SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	6.9	7.0	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	7.0	7.1	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	7.1	7.2	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	7.2	7.3	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	7.3	7.4	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	7.4	7.5	0-10	1.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	7.5	7.6	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	7.6	7.7	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	7.7	7.8	0-10	1.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8, HYD-10, HYD-11	NI
E	7.8	7.9	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8, HYD-10, HYD-11	NI
E	7.9	8.0	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	8.0	8.1	0-10	2.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8, HYD-10, HYD-11	NI
E	8.1	8.2	0-10	2.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed (2)	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8, HYD-10, HYD-11	NI
E	8.2	8.3	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	8.3	8.4	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	8.4	8.5	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	8.5	8.6	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	8.6	8.7	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	8.7	8.8	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	8.8	8.9	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	8.9	9.0	0-10	1.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	9.0	9.1	0-10	2.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	9.1	9.2	0-10	3.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	9.2	9.3	0-10	5.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	9.3	9.4	0-10	7.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	9.4	9.5	0-10	3.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	9.5	9.6	0-10	5.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	9.6	9.7	0-10	5.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	9.7	9.8	0-10	2.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	9.8	9.9	0-10	1.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	9.9	10.0	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
E	10.0	10.1	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
E	10.1	10.2	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
E	10.2	10.3	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	10.3	10.4	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	10.4	10.5	0-10	0.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	10.5	10.6	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	10.6	10.7	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	10.7	10.8	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
E	10.8	10.9	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perrenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
E	10.9	11.0	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	11.0	11.1	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
E	11.1	11.2	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
E	11.2	11.3	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
G	0.0	0.1	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
G	0.1	0.2	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
G	0.2	0.3	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
G	0.3	0.4	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
G	0.4	0.5	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
G	0.5	0.6	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
G	0.6	0.7	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
G	0.7	0.8	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
G	0.8	0.9	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
G	0.9	1.0	0-10	1.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
G	1.0	1.1	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
G	1.1	1.2	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
G	1.2	1.3	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
G	1.3	1.4	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed (Myrick Canyon)	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
G	1.4	1.5	0-10	1.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
G	1.5	1.6	0-10	4.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
G	1.6	1.7	0-10	3.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
G	1.7	1.8	0-10	2.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
G	1.8	1.9	0-10	1.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
G	1.9	2.0	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
G	2.0	2.1	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
G	2.1	2.2	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
G	2.2	2.3	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
G	2.3	2.4	0-10	2.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
G	2.4	2.5	0-10	2.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
G	2.5	2.6	0-10	2.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
G	2.6	2.7	0-10	1.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
G	2.7	2.8	0-10	2.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
G	2.8	2.9	0-10	2.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
G	2.9	3.0	0-10	2.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
G	3.0	3.1	0-10	2.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
G	3.1	3.2	0-10	4.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
G	3.2	3.3	0-10	4.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
G	3.3	3.4	0-10	3.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
G	3.4	3.5	0-10	5.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
G	3.5	3.6	0-10	4.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
G	3.6	3.7	0-10	8.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
G	3.7	3.8	0-10	7.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
G	3.8	3.9	0-10	10.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
G	3.9	4.0	10-20	13.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	California Aqueduct	None	NA	None	San Andreas Rift Zone SEA	R2UBKHrx	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
G	4.0	4.1	20-30	27.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
G	4.1	4.2	20-30	13.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
G	4.2	4.3	20-30	9.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
G	4.3	4.4	>30	12.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
G	4.4	4.5	>30	26.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
G	4.5	4.6	>30	40.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
G	4.6	4.7	20-30	16.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206-Ant.-Fremont Vlys;18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
G	4.7	4.8	20-30	16.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206-Ant.-Fremont Vlys;18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
G	4.8	4.9	20-30	23.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
G	4.9	5.0	20-30	22.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
G	5.0	5.1	10-20	6.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
G	5.1	5.2	0-10	8.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
G	5.2	5.3	0-10	5.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
G	5.3	5.4	10-20	18.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
G	5.4	5.5	10-20	4.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	PEMB	Partially Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8, HYD-10, HYD-11	L
G	5.5	5.6	0-10	3.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	PEMB	Partially Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8, HYD-10, HYD-11	L

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
G	5.6	5.7	20-30	12.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
G	5.7	5.8	20-30	13.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
G	5.8	5.9	10-20	12.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
G	5.9	6.0	10-20	6.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI		NI
G	6.0	6.1	10-20	1.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	Unnamed (2)	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
G	6.1	6.2	10-20	7.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
G	6.2	6.3	10-20	9.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
G	6.3	6.4	10-20	12.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
G	6.4	6.5	10-20	8.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Not Hydric	No	NI	N/A	NI
G	6.5	6.6	10-20	12.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	6.6	6.7	10-20	11.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	6.7	6.8	20-30	16.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	6.8	6.9	20-30	19.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	6.9	7.0	>30	25.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	7.0	7.1	>30	28.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	7.1	7.2	>30	32.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	7.2	7.3	20-30	23.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	7.3	7.4	>30	39.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	7.4	7.5	>30	27.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	7.5	7.6	>30	12.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	7.6	7.7	>30	40.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	7.7	7.8	>30	19.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	7.8	7.9	10-20	9.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	7.9	8.0	10-20	4.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	8.0	8.1	10-20	15.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	8.1	8.2	10-20	7.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	8.2	8.3	0-10	3.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	8.3	8.4	10-20	5.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	8.4	8.5	10-20	17.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	8.5	8.6	10-20	6.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	8.6	8.7	10-20	4.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	8.7	8.8	10-20	3.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	8.8	8.9	10-20	5.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
G	8.9	9.0	10-20	10.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	9.0	9.1	20-30	9.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Unknown	No	NI	N/A	NI
G	9.1	9.2	20-30	16.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Unknown	No	NI	N/A	NI
G	9.2	9.3	20-30	10.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Unknown	No	NI	N/A	NI
G	9.3	9.4	20-30	9.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	9.4	9.5	20-30	13.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	9.5	9.6	10-20	17.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	9.6	9.7	10-20	12.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	9.7	9.8	20-30	13.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	9.8	9.9	20-30	18.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	9.9	10.0	20-30	20.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	10.0	10.1	20-30	10.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	10.1	10.2	10-20	5.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	10.2	10.3	10-20	12.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	10.3	10.4	10-20	13.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	10.4	10.5	10-20	11.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	10.5	10.6	10-20	13.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	SSARW	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	10.6	10.7	>30	16.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Portal Canyon)	None	None	Yes	SSARW	None	None	Unknown	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8, HYD-10, HYD-11	L
G	10.7	10.8	>30	24.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	SSARW	None	None	Unknown	Yes	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8, HYD-10, HYD-11	L
G	10.8	10.9	20-30	8.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	10.9	11.0	10-20	4.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	11.0	11.1	10-20	4.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	11.1	11.2	10-20	4.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
G	11.2	11.3	10-20	14.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	Unnamed (2)	None	None	Yes	None	None	None	Unknown	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
G	11.3	11.4	20-30	30.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
G	11.4	11.5	>30	34.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	11.5	11.6	>30	13.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	11.6	11.7	>30	18.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	11.7	11.8	20-30	19.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	11.8	11.9	20-30	29.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	11.9	12.0	20-30	13.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	12.0	12.1	20-30	13.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	Bouquet Pipeline	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	12.1	12.2	20-30	33.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	12.2	12.3	20-30	32.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	12.3	12.4	20-30	17.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	12.4	12.5	20-30	23.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	SSARW	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perrenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
G	12.5	12.6	>30	5.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	San Francisquito Canyon	None	None	None	Yes	SSARW	None	None	Unknown	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8, HYD-10, HYD-11	L
G	12.6	12.7	20-30	27.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	San Francisquito Canyon	None	None	None	Yes	SSARW	None	None	Unknown	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8, HYD-10, HYD-11	L
G	12.7	12.8	20-30	29.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	San Francisquito Canyon	None	Los Angeles Aqueduct (Tunnel)	None	Yes	SSARW	Santa Clara River SEA	None	Unknown	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8, HYD-10, HYD-11	L
G	12.8	12.9	20-30	20.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	Los Angeles Aqueduct (Tunnel)	None	Yes	SSARW	Santa Clara River SEA	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
G	12.9	13.0	20-30	23.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	Yes	SSARW	Santa Clara River SEA	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
G	13.0	13.1	>30	18.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	SSARW	Santa Clara River SEA	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	13.1	13.2	20-30	24.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	Santa Clara River SEA	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	13.2	13.3	20-30	21.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	Los Angeles Aqueduct (Tunnel)	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	13.3	13.4	>30	31.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	Los Angeles Aqueduct (Tunnel)	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	13.4	13.5	>30	41.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	Los Angeles Aqueduct (Tunnel)	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	13.5	13.6	>30	42.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	13.6	13.7	20-30	25.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	13.7	13.8	20-30	28.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	13.8	13.9	>30	55.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	SRS	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	13.9	14.0	>30	16.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed(Bee Canyon)	None	None	Yes	SRS	None	None	Unknown	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8, HYD-10, HYD-11	L
G	14.0	14.1	>30	35.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	SRS	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	14.1	14.2	>30	39.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	14.2	14.3	>30	34.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	14.3	14.4	20-30	7.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	14.4	14.5	10-20	8.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	14.5	14.6	10-20	7.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	14.6	14.7	>30	45.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	14.7	14.8	>30	38.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Baird Canyon)	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
G	14.8	14.9	>30	23.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	14.9	15.0	20-30	31.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	15.0	15.1	20-30	30.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	15.1	15.2	10-20	16.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	15.2	15.3	20-30	7.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	15.3	15.4	20-30	6.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	15.4	15.5	20-30	4.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	15.5	15.6	20-30	16.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	15.6	15.7	20-30	16.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	15.7	15.8	>30	47.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	15.8	15.9	>30	41.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	15.9	16.0	20-30	11.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (2)	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
G	16.0	16.1	20-30	11.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	16.1	16.2	20-30	10.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	16.2	16.3	10-20	10.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	16.3	16.4	0-10	4.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	16.4	16.5	0-10	1.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed(Dry Canyon)	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
G	16.5	16.6	10-20	1.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Dry Canyon)	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perrenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
G	16.6	16.7	10-20	4.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Dry Canyon)	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
G	16.7	16.8	10-20	5.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Dry Canyon)	None	None	Yes	SCLORF	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
G	16.8	16.9	10-20	5.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Dry Canyon)	None	None	Yes	SCLORF	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
G	16.9	17.0	0-10	5.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Dry Canyon)	None	None	Yes	SCLORF	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
G	17.0	17.1	10-20	3.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	SCLORF	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
G	17.1	17.2	10-20	3.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Dry Canyon)	None	None	Yes	SCLORF	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
G	17.2	17.3	10-20	1.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Dry Canyon)	None	None	Yes	SCLORF	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
G	17.3	17.4	10-20	2.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	SCLORF	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
G	17.4	17.5	10-20	6.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Dry Canyon)	None	None	Yes	SCLORF	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
G	17.5	17.6	0-10	6.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Dry Canyon)	None	None	Yes	SCLORF	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
G	17.6	17.7	20-30	7.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	SCLORF	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	17.7	17.8	20-30	9.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	SCLORF	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	17.8	17.9	20-30	7.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	SCLORF	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	17.9	18.0	20-30	6.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	SCLORF	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	18.0	18.1	10-20	5.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	SCLORF	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	18.1	18.2	10-20	4.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	SCLORF	None	None	Unknown	No	M		L
G	18.2	18.3	10-20	5.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	SCLORF	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	18.3	18.4	10-20	7.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	SCLORF	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	18.4	18.5	10-20	14.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Dry Canyon)	None	None	Yes	SCLORF	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
G	18.5	18.6	20-30	9.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Dry Canyon), Unnamed	None	None	Yes	SCLORF	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
G	18.6	18.7	20-30	11.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Dry Canyon)	None	None	Yes	SCLORF	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
G	18.7	18.8	20-30	3.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Dry Canyon)	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
G	18.8	18.9	20-30	6.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	18.9	19.0	10-20	13.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	19.0	19.1	10-20	6.3	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	19.1	19.2	10-20	9.4	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	19.2	19.3	10-20	14.3	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Pettinger Canyon)	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
G	19.3	19.4	10-20	7.6	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Pettinger Canyon)	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
G	19.4	19.5	20-30	22.0	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (Pettinger Canyon)	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
G	19.5	19.6	20-30	25.1	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	19.6	19.7	20-30	18.3	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	19.7	19.8	10-20	6.1	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	19.8	19.9	0-10	4.1	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	19.9	20.0	0-10	7.0	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	20.0	20.1	0-10	1.4	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	20.1	20.2	0-10	4.9	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	20.2	20.3	0-10	3.4	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	20.3	20.4	10-20	9.3	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	20.4	20.5	10-20	7.1	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	20.5	20.6	10-20	3.7	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	20.6	20.7	20-30	14.1	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	20.7	20.8	20-30	18.2	Improve	2	Existing Towers	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	20.8	20.9	20-30	10.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
G	20.9	21.0	>30	31.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
G	21.0	21.1	>30	27.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	Yes	SSARW	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perrenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
G	21.1	21.2	>30	15.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	Yes	SSARW	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
G	21.2	21.2	>30	8.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	SSARW	None	None	Unknown	No	M	N/A	L
GV	0.0	0.1	10-20	13.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Not Hydric	No	NI	N/A	NI
GV	0.1	0.2	10-20	4.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Not Hydric	No	NI	N/A	NI
GV	0.2	0.3	10-20	8.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Not Hydric	No	NI	N/A	NI
GV	0.3	0.4	10-20	15.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	Unnamed	None	None	No	None	None	None	Not Hydric	No	L	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
GV	0.4	0.5	10-20	10.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Not Hydric	No	NI	N/A	NI
GV	0.5	0.6	20-30	15.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Not Hydric	No	NI	N/A	NI
GV	0.6	0.7	20-30	10.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Not Hydric	No	NI	N/A	NI
GV	0.7	0.8	10-20	13.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Not Hydric	No	NI	N/A	NI
GV	0.8	0.9	10-20	22.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Not Hydric	No	NI	N/A	NI
GV	0.9	1.0	20-30	17.8	None	5	Steel Lattice	0.724	0.724	0.85	1.24	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	1.0	1.1	20-30	33.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	1.1	1.2	20-30	23.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Partially Hydric	No	L	N/A	NI
GV	1.2	1.3	20-30	17.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	1.3	1.4	20-30	30.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	1.4	1.5	>30	27.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	1.5	1.6	>30	29.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	1.6	1.7	>30	27.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
GV	1.7	1.8	20-30	11.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
GV	1.8	1.9	20-30	11.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	Munz Canyon	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
GV	1.9	2.0	20-30	4.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	Munz Canyon	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
GV	2.0	2.1	20-30	13.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	Munz Canyon	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
GV	2.1	2.2	20-30	10.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	Munz Canyon	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
GV	2.2	2.3	20-30	14.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	Munz Canyon	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
GV	2.3	2.4	20-30	11.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	2.4	2.5	>30	17.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	2.5	2.6	20-30	13.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	2.6	2.7	20-30	35.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	2.7	2.8	20-30	20.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	2.8	2.9	20-30	22.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	2.9	3.0	20-30	8.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	3.0	3.1	20-30	24.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	3.1	3.2	10-20	7.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	3.2	3.3	10-20	17.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	Yes	None	None	None	Unknown	No	M	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	L
GV	3.3	3.4	>30	15.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	3.4	3.5	20-30	6.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	3.5	3.6	>30	28.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	3.6	3.7	>30	19.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	Los Angeles Aqueduct (Tunnel)	None	No	None	None	None	Unknown	No	L	N/A	NI
GV	3.7	3.8	>30	17.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	Los Angeles Aqueduct (Tunnel)	None	No	None	None	None	Unknown	No	L	N/A	NI
GV	3.8	3.9	20-30	28.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	3.9	4.0	20-30	29.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	4.0	4.1	20-30	15.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	4.1	4.2	>30	27.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	4.2	4.3	20-30	17.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	4.3	4.4	20-30	7.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	4.4	4.5	>30	34.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	4.5	4.6	>30	43.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	4.6	4.7	>30	36.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	4.7	4.8	>30	20.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	4.8	4.9	>30	21.8	None	6	Steel Lattice	0.724	0.724	1.24	1.63	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	4.9	5.0	>30	35.9	None	6	Steel Lattice	0.724	0.724	1.24	1.63	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	5.0	5.1	>30	38.3	None	6	Steel Lattice	0.724	0.724	1.24	1.63	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	5.1	5.2	20-30	19.7	None	5	Steel Lattice	0.724	0.724	0.85	1.24	18070102	None	Unnamed(tributary to South Portal Canyon)	Los AngelesAqueduct (Tunnel)	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
GV	5.2	5.3	10-20	8.4	None	4	Steel Lattice	0.724	0.724	0.56	0.85	18070102	None	Unnamed (tributary to South Portal Canyon)	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
GV	5.3	5.4	10-20	22.5	None	4	Steel Lattice	0.724	0.724	0.56	0.85	18070102	None	None	None	None	Yes	None	None	None	Unknown	No	H	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	M
GV	5.4	5.5	20-30	34.7	None	5	Steel Lattice	0.724	0.724	0.85	1.24	18070102	None	Unnamed (tributary to South Portal Canyon)	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
GV	5.5	5.6	20-30	17.0	None	5	Steel Lattice	0.724	0.724	0.85	1.24	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	5.6	5.7	>30	14.3	None	6	Steel Lattice	0.724	0.724	1.24	1.63	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	5.7	5.8	>30	32.3	None	6	Steel Lattice	0.724	0.724	1.24	1.63	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	5.8	5.9	>30	38.9	None	6	Steel Lattice	0.724	0.724	1.24	1.63	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	5.9	6.0	>30	20.5	None	6	Steel Lattice	0.724	0.724	1.24	1.63	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	6.0	6.1	10-20	13.6	None	4	Steel Lattice	0.724	0.724	0.56	0.85	18070102	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
GV	6.1	6.2	10-20	8.6	None	4	Steel Lattice	0.724	0.724	0.56	0.85	18070102	None	None	None	None	Yes	None	None	None	Unknown	No	H	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	M

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perrenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
GV	6.2	6.3	10-20	13.7	None	4	Steel Lattice	0.724	0.724	0.56	0.85	18070102	None	Unnamed (tributary to Francisquito Canyon)	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
GV	6.3	6.4	10-20	9.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102	None	Unnamed (tributary to Francisquito Canyon)	None	None	Yes	None	None	None	Unknown	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
GV	6.4	6.5	10-20	15.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102	None	Unnamed (2) (tributary to Francisquito Canyon)	None	None	Yes	None	None	None	Unknown	No	L	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
F1	0.0	0.1	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
F1	0.1	0.2	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
F1	0.2	0.3	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
F1	0.3	0.4	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
F1	0.4	0.5	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
F1	0.5	0.6	0-10	1.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
F1	0.6	0.7	0-10	1.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
F1	0.7	0.8	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
F1	0.8	0.8	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
F2	0.0	0.1	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
F2	0.1	0.2	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
F2	0.2	0.3	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
F2	0.3	0.4	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
F2	0.4	0.5	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
F2	0.5	0.6	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
F2	0.6	0.7	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
F2	0.7	0.8	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
F2	0.8	0.9	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
F2	0.9	1.0	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
F2	1.0	1.1	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
F2	1.1	1.2	0-10	0.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
F2	1.2	1.3	0-10	0.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	Yes	NA	None	None	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
F2	1.3	1.4	0-10	0.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
F2	1.4	1.5	0-10	0.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
F2	1.5	1.6	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
F2	1.6	1.7	0-10	0.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
F2	1.7	1.8	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
F2	1.8	1.9	0-10	0.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
F2	1.9	2.0	0-10	0.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
F2	2.0	2.1	0-10	0.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
F2	2.1	2.2	0-10	0.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
F2	2.2	2.3	0-10	0.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
F2	2.3	2.4	0-10	0.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
F2	2.4	2.5	0-10	0.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
F2	2.5	2.6	0-10	0.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
F2	2.6	2.7	0-10	0.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
F2	2.7	2.8	0-10	0.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
115	0.0	0.1	0-10	0.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
115	0.1	0.2	0-10	0.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	Yes	NA	None	None	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
115	0.2	0.3	0-10	1.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI		NI
115	0.3	0.4	0-10	0.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
115	0.4	0.5	0-10	0.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI		NI
115	0.5	0.6	0-10	0.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
115	0.6	0.7	0-10	0.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
115	0.7	0.8	0-10	0.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
115	0.8	0.9	0-10	0.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
115	0.9	1.0	0-10	0.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
115	1.0	1.1	0-10	0.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
115	1.1	1.2	0-10	0.3	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	M	N/A	L
115	1.2	1.3	0-10	0.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
115	1.3	1.4	0-10	0.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
115	1.4	1.5	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
115	1.5	1.6	0-10	0.3	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	L
115	1.6	1.7	0-10	0.3	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	M	N/A	L
115	1.7	1.8	0-10	0.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
115	1.8	1.9	0-10	0.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	Yes	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
115	1.9	2.0	0-10	1.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
115	2.0	2.1	0-10	0.8	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI		NI
115	2.1	2.2	0-10	1.5	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	L
115	2.2	2.3	0-10	1.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
115	2.3	2.4	0-10	1.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
115	2.4	2.5	0-10	1.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
115	2.5	2.6	0-10	1.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
115	2.6	2.7	0-10	1.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
115	2.7	2.8	0-10	2.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
115	2.8	2.9	0-10	3.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
115	2.9	3.0	0-10	2.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
115	3.0	3.1	0-10	4.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
115	3.1	3.2	0-10	3.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
115	3.2	3.3	0-10	4.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
115	3.3	3.4	0-10	6.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
115	3.4	3.5	0-10	6.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
115	3.5	3.6	10-20	3.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
115	3.6	3.7	10-20	13.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
115	3.7	3.8	10-20	8.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
115	3.8	3.9	10-20	3.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
115	3.9	4.0	10-20	4.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
115	4.0	4.1	10-20	10.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	California Aqueduct	None	NA	None	San Andreas Rift Zone SEA	R2UBKHrx	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
115	4.1	4.2	10-20	11.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	California Aqueduct	None	NA	None	San Andreas Rift Zone SEA	R2UBKHrx	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
115	4.2	4.3	10-20	9.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
115	4.3	4.4	20-30	17.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
115	4.4	4.5	10-20	11.3	None	4	Steel Lattice	0.724	0.724	0.56	0.85	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
115	4.5	4.6	10-20	4.5	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
115	4.6	4.7	10-20	12.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
115	4.7	4.8	0-10	9.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
H1	0.0	0.1	0-10	1.1	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
H1	0.1	0.2	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
H1	0.2	0.3	0-10	2.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
H1	0.3	0.4	0-10	2.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
H1	0.4	0.5	0-10	2.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
H1	0.5	0.6	0-10	3.0	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
H1	0.6	0.7	0-10	4.0	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
H1	0.7	0.8	0-10	3.2	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
H1	0.8	0.9	0-10	4.3	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
H1	0.9	1.0	0-10	3.3	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
H1	1.0	1.1	0-10	4.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
H1	1.1	1.2	0-10	3.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
H1	1.2	1.3	0-10	3.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
H1	1.3	1.4	0-10	3.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
H1	1.4	1.5	0-10	4.2	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
H1	1.5	1.6	0-10	4.2	None	3	Steel Lattice	0.584	0.584	0.27	0.56	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
H1	1.6	1.7	0-10	4.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
H1	1.7	1.8	0-10	5.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
H1	1.8	1.9	0-10	6.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
H1	1.9	2.0	0-10	7.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
H1	2.0	2.1	0-10	6.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
H1	2.1	2.2	0-10	8.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	PUBFx	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
H1	2.2	2.3	10-20	14.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	California Aqueduct	None	NA	None	San Andreas Rift Zone SEA	R2UBKHrx	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
H1	2.3	2.4	20-30	24.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
H1	2.4	2.5	20-30	12.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
H1	2.5	2.6	20-30	8.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
H1	2.6	2.7	0-10	10.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
H1	2.7	2.7	10-20	8.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
H2	0.0	0.1	20-30	14.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
H2	0.1	0.2	20-30	17.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
H2	0.2	0.3	>30	29.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perrenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
H2	0.3	0.4	>30	44.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
H2	0.4	0.5	20-30	26.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206-Ant.-Fremont Vlys;18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
H2	0.5	0.6	10-20	11.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
H2	0.6	0.7	10-20	21.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
H2	0.7	0.8	10-20	7.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
H2	0.8	0.9	20-30	4.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
H2	0.9	1.0	10-20	2.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
H2	1.0	1.1	0-10	3.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	PEMB	Partially Hydric	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
H2	1.1	1.2	10-20	16.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
H2	1.2	1.3	10-20	11.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206-Ant.-Fremont Vlys;18070102-Santa Clara	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
H2	1.3	1.4	10-20	21.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
H2	1.4	1.5	10-20	17.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
H2	1.5	1.6	10-20	5.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
H2	1.6	1.7	0-10	3.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
H2	1.7	1.8	0-10	0.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed (Amargosa Creek)	None	None	NA	None	None	PEMB	Partially Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8, HYD-10, HYD-11	L
H2	1.8	1.9	10-20	15.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed (Amargosa Creek)	None	None	NA	None	None	None	Not Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
H2	1.9	2.0	10-20	15.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
H2	2.0	2.1	10-20	15.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
H2	2.1	2.2	20-30	8.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
H2	2.2	2.3	20-30	23.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
H2	2.3	2.4	20-30	30.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
H2	2.4	2.5	20-30	25.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
H2	2.5	2.6	20-30	12.9	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18090206 - Antelope-Fremont Valleys	None	None	None	None	No	None	None	None	Not Hydric	No	NI	N/A	NI
H2	2.6	2.7	20-30	21.2	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18090206 - Antelope-Fremont Valleys	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	2.7	2.8	20-30	17.8	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	2.8	2.9	20-30	17.5	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	2.9	3.0	>30	49.7	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18090206 - Antelope-Fremont Valleys	None	None	None	None	Yes	None	None	None	Unknown	No	H	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	M
H2	3.0	3.1	>30	16.6	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18090206 - Antelope-Fremont Valleys	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	3.1	3.2	>30	24.3	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18090206 - Antelope-Fremont Valleys	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	3.2	3.3	20-30	29.4	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18090206-Ant.-Fremont Vlys;18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	3.3	3.4	20-30	15.9	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18090206-Ant.-Fremont Vlys;18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	3.4	3.5	10-20	23.2	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	3.5	3.6	20-30	21.8	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	3.6	3.7	20-30	28.1	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	3.7	3.8	20-30	33.8	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed (Spunky Canyon)	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	3.8	3.9	>30	49.4	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	3.9	4.0	>30	39.7	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	4.0	4.1	>30	39.0	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	4.1	4.2	>30	33.2	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	4.2	4.3	>30	24.7	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	4.3	4.4	>30	23.9	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	4.4	4.5	>30	25.3	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	4.5	4.6	>30	14.1	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	4.6	4.7	>30	23.0	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	4.7	4.8	20-30	23.4	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	H	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	M
H2	4.8	4.9	>30	9.7	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	H	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	M
H2	4.9	5.0	>30	20.4	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Unknown	No	NI	N/A	NI
H2	5.0	5.1	10-20	16.1	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Unknown	No	NI	N/A	NI
H2	5.1	5.2	10-20	6.1	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Unknown	No	NI	N/A	NI
H2	5.2	5.3	20-30	12.7	Use	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Unknown	No	NI	N/A	NI
H2	5.3	5.4	20-30	11.1	Use	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Bouquet Canyon	None	None	No	None	None	PFOA	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perrenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
H2	5.4	5.5	>30	39.1	Use	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	H	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	M
H2	5.5	5.6	20-30	22.7	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI		NI
H2	5.6	5.7	20-30	34.3	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	H	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	M
H2	5.7	5.8	>30	52.8	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed (Martindale Canyon)	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	5.8	5.9	>30	19.7	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	5.9	6.0	20-30	7.4	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	6.0	6.1	20-30	10.6	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	6.1	6.2	20-30	14.3	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	6.2	6.3	20-30	22.0	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	6.3	6.4	20-30	28.2	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	6.4	6.5	20-30	38.6	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	6.5	6.6	20-30	25.7	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	6.6	6.7	20-30	40.7	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	H	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	M
H2	6.7	6.8	20-30	16.4	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	6.8	6.9	10-20	8.2	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	6.9	7.0	10-20	19.7	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	7.0	7.1	20-30	22.3	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	HYD-12	NI
H2	7.1	7.2	20-30	10.9	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	HYD-12	NI
H2	7.2	7.3	10-20	16.4	Use	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	HYD-12	NI
H2	7.3	7.4	20-30	18.9	Use	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Unknown	No	NI	HYD-12	NI
H2	7.4	7.5	20-30	27.4	Use	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	NA	SCWRF	None	None	Unknown	No	H	HYD-12	M
H2	7.5	7.6	20-30	25.7	Use	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	Bouquet Canyon	None	None	None	Yes	SCWRF	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8, HYD-12	M
H2	7.6	7.7	20-30	25.3	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	Yes	SCWRF	None	None	Unknown	No	H	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8, HYD-12	M
H2	7.7	7.8	20-30	11.4	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	HYD-12	NI
H2	7.8	7.9	20-30	15.3	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	HYD-12	NI
H2	7.9	8.0	20-30	19.1	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	HYD-12	NI
H2	8.0	8.1	20-30	25.1	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	8.1	8.2	20-30	19.0	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	8.2	8.3	20-30	33.9	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	SCWRF	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	8.3	8.4	20-30	26.1	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	SCWRF	None	None	Unknown	No	H	N/A	M
H2	8.4	8.5	20-30	12.4	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	8.5	8.6	20-30	12.8	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	8.6	8.7	20-30	7.7	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	8.7	8.8	20-30	6.5	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	8.8	8.9	20-30	8.9	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	8.9	9.0	20-30	13.9	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	9.0	9.1	20-30	19.7	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	9.1	9.2	20-30	24.4	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	9.2	9.3	20-30	22.8	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	9.3	9.4	20-30	12.4	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	9.4	9.5	>30	42.8	Use	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	Yes	SCWRF	None	None	Unknown	No	H	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	M
H2	9.5	9.6	>30	41.9	Use	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	SCWRF	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	9.6	9.7	>30	7.3	Use	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	9.7	9.8	20-30	22.9	Use	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	9.8	9.9	20-30	35.0	Use	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	9.9	10.0	20-30	28.4	Use	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	SCWRF	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	10.0	10.1	20-30	21.6	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	SCWRF	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	10.1	10.2	20-30	38.1	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	10.2	10.3	20-30	31.7	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	10.3	10.4	>30	18.9	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	10.4	10.5	>30	40.2	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	10.5	10.6	20-30	24.4	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	10.6	10.7	>30	49.2	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	Yes	SCWRF	None	None	Unknown	No	H	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	M
H2	10.7	10.8	20-30	27.8	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	SCWRF	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	10.8	10.9	20-30	28.7	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	Yes	SCWRF	None	None	Unknown	No	H	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	M
H2	10.9	11.0	20-30	12.7	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	11.0	11.1	20-30	10.8	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	11.1	11.2	20-30	12.0	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	11.2	11.3	20-30	11.8	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	11.3	11.4	20-30	19.9	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	H	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	M
H2	11.4	11.5	20-30	16.1	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	11.5	11.6	20-30	26.7	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	11.6	11.7	20-30	14.2	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	11.7	11.8	20-30	14.2	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	11.8	11.9	20-30	12.8	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perennial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
H2	11.9	12.0	20-30	24.6	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	12.0	12.1	20-30	13.8	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	12.1	12.2	10-20	7.2	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	12.2	12.3	20-30	12.2	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	12.3	12.4	20-30	8.4	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	12.4	12.5	>30	43.6	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	12.5	12.6	20-30	30.3	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	SCLORF	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	12.6	12.7	20-30	25.8	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	SCLORF	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	12.7	12.8	20-30	30.3	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	12.8	12.9	>30	28.9	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	12.9	13.0	20-30	24.8	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	13.0	13.1	>30	27.5	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	13.1	13.2	20-30	21.1	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	13.2	13.3	20-30	16.2	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	13.3	13.4	20-30	24.8	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI		NI
H2	13.4	13.5	20-30	12.1	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	H	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	M
H2	13.5	13.6	20-30	22.4	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	13.6	13.7	>30	12.4	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	13.7	13.8	>30	21.1	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	H	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	M
H2	13.8	13.9	>30	32.3	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	13.9	14.0	>30	18.2	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	14.0	14.1	20-30	17.2	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	14.1	14.2	>30	12.0	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	14.2	14.3	>30	13.2	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	14.3	14.4	20-30	19.3	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	H	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	M
H2	14.4	14.5	20-30	22.4	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	14.5	14.6	10-20	14.6	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	14.6	14.7	20-30	7.5	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	14.7	14.8	20-30	10.8	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	14.8	14.9	20-30	25.0	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	14.9	15.0	20-30	14.0	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	15.0	15.1	>30	29.4	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	H	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	M
H2	15.1	15.2	20-30	16.5	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Unknown	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	15.2	15.3	20-30	17.9	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	Yes	SCLORF	None	None	Unknown	No	H	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	M
H2	15.3	15.4	20-30	7.2	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	Yes	SCLORF	None	None	Unknown	No	H	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	M
H2	15.4	15.5	>30	10.5	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI		NI
H2	15.5	15.6	>30	44.9	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	Yes	SCLORF, SSARW	None	None	Unknown	No	H	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	M
H2	15.6	15.7	>30	24.9	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed (Haskell Canyon)	None	None	Yes	SCLORF, SSARW	None	None	Partially Hydric	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	15.7	15.8	20-30	8.0	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	Yes	SCLORF, SSARW	None	None	Partially Hydric	No	H	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	M
H2	15.8	15.9	20-30	25.4	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	15.9	16.0	20-30	7.6	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	16.0	16.1	20-30	22.9	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	16.1	16.2	20-30	25.6	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Partially Hydric	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	16.2	16.3	20-30	27.0	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Partially Hydric	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	M
H2	16.3	16.4	>30	16.8	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	16.4	16.5	>30	22.7	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	16.5	16.6	>30	19.3	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	16.6	16.7	>30	28.7	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed (Pettinger Canyon)	None	None	NA	SCLORF	None	None	Partially Hydric	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	M
H2	16.7	16.8	20-30	25.2	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	Unnamed (Pettinger Canyon)	None	None	NA	SCLORF	None	None	Partially Hydric	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	M
H2	16.8	16.9	20-30	39.8	None	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	SCLORF	None	None	Unknown	No	H	N/A	M
H2	16.9	17.0	>30	48.3	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
H2	17.0	17.1	20-30	19.5	Improve	H	Steel Lattice	0.4	0.4	0.043	0.043	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Unknown	No	NI	N/A	NI

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perrenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
I	0.0	0.1	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	0.1	0.2	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	0.2	0.3	0-10	1.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	0.3	0.4	0-10	1.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	0.4	0.5	0-10	1.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	0.5	0.6	0-10	1.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	0.6	0.7	0-10	0.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	0.7	0.8	0-10	0.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	0.8	0.9	0-10	0.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	0.9	1.0	0-10	0.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	1.0	1.1	0-10	0.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	1.1	1.2	0-10	0.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	1.2	1.3	0-10	0.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	1.3	1.4	0-10	1.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	1.4	1.5	0-10	0.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	1.5	1.6	0-10	1.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	1.6	1.7	0-10	0.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	1.7	1.8	0-10	2.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	1.8	1.9	0-10	1.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	1.9	2.0	0-10	1.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	2.0	2.1	0-10	1.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	2.1	2.2	0-10	2.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	2.2	2.3	0-10	1.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	2.3	2.4	0-10	1.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	2.4	2.5	0-10	0.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	2.5	2.6	0-10	1.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	2.6	2.7	0-10	1.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	2.7	2.8	0-10	2.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	2.8	2.9	0-10	2.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	2.9	3.0	0-10	3.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	3.0	3.1	0-10	4.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	3.1	3.2	0-10	4.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	3.2	3.3	0-10	4.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	3.3	3.4	0-10	1.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	3.4	3.5	0-10	1.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	3.5	3.6	0-10	1.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	3.6	3.7	0-10	2.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	3.7	3.8	0-10	4.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	3.8	3.9	0-10	6.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	3.9	4.0	0-10	4.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	4.0	4.1	0-10	5.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	4.1	4.2	0-10	1.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	4.2	4.3	0-10	2.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	4.3	4.4	0-10	6.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	4.4	4.5	0-10	5.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	4.5	4.6	10-20	8.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	R2UBKHrx	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	4.6	4.7	10-20	7.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Railroad Canyon	California Aqueduct	None	NA	None	San Andreas Rift Zone SEA	R2UBKHrx	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
I	4.7	4.8	10-20	10.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Railroad Canyon	California Aqueduct	None	NA	None	San Andreas Rift Zone SEA	R2UBKHrx	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
I	4.8	4.9	20-30	29.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	4.9	5.0	20-30	24.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	5.0	5.1	>30	12.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	5.1	5.2	>30	21.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	5.2	5.3	20-30	11.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	5.3	5.4	>30	12.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	5.4	5.5	20-30	36.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	5.5	5.6	20-30	14.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	5.6	5.7	20-30	20.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	5.7	5.8	>30	22.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	5.8	5.9	>30	7.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	5.9	6.0	10-20	10.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	6.0	6.1	10-20	3.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	6.1	6.2	10-20	14.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	6.2	6.3	10-20	10.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	6.3	6.4	10-20	17.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	6.4	6.5	20-30	30.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI

TABLE A-10 – IMPACT ASSESSMENT TABLE
Geologic Feature: Linear Extensibility Percent

Location			Feature			Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Linear Extensibility Percent	Initial	Residual
K	2.1	2.2	ScF2,YoC	Saugus loam, Yolo loam	No Data	N/A	N/A
K	2.2	2.3	HcC,ScF2,YoC	Hanford sandy loam, Saugus loam, Yolo loam	No Data	N/A	N/A
K	2.3	2.4	HcC,ScF2	Hanford sandy loam, Saugus loam	No Data	N/A	N/A
K	2.4	2.5	MfC,OgC,ScF2	Metz loam sand, Oak Glen loam, Saugus loam	No Data	N/A	N/A
K	2.5	2.6	OgC,ScF2	Oak Glem loam, Saugus loam	No Data	N/A	N/A
K	2.6	2.7	OgC,OgE	Oak Glen loam, Ojai loam	No Data	N/A	N/A
K	2.7	2.8	CyA,OgC,OgE	Cortina sandy loam, Oak Glen loam, Ojai loam	No Data	N/A	N/A
K	2.8	2.9	CyA,OgE	Cortina sandy loam, Ojai loam	No Data	N/A	N/A
K	2.9	3.0	CyA,HcA	Cortina sandy loam, Hanford sandy loam	No Data	N/A	N/A
K	3.0	3.1	CyA,HcA,MfC	Cortina sandy loam, Hanford sandy loam, Metz loamy sand	No Data	N/A	N/A
K	3.1	3.4	MfC,ScF2	Metz loamy sand, Saugus loam	No Data	N/A	N/A
K	3.4	3.7	OgC,ScF2	Oak Glen loam, Saugus loam	No Data	N/A	N/A
K	3.7	3.8	ScF2	Saugus loam	No Data	N/A	N/A
K	3.8	4.1	MfC,ScF2	Metz loamy sand, Saugus loam	No Data	N/A	N/A
K	4.1	4.2	MfC,OgE,ScF2	Metz loamy sand, Ojai loam, Saugus loam	No Data	N/A	N/A
K	4.2	4.3	OgE,ScF2	Ojai loam, Saugus loam	No Data	N/A	N/A
K	4.3	4.4	OgE,Rg,Sa	Ojai loam, Riverwash, Sandy alluvial land	No Data	N/A	N/A
K	4.4	4.5	MfA,Rg,Sa	Metz loamy sand, Riverwash, Sandy alluvial land	No Data	N/A	N/A
K	4.5	4.6	MfA	Metz loamy sand	No Data	N/A	N/A
K	4.6	4.7	CyA,HcA,MfA	Cortina sandy loam, Hanford sandy loam, Metz loamy sand	No Data	N/A	N/A
K	4.7	4.8	CyA,HcA	Cortina sandy loam, Hanford sandy loam	No Data	N/A	N/A
K	4.8	4.9	HcA,YoC	Hanford sandy loam, Yolo loam	No Data	N/A	N/A
K	4.9	5.0	HcA,ScF2,YoC	Hanford sandy loam, Saugus loam, Yolo loam	No Data	N/A	N/A
K	5.0	5.1	ScF2,YoC	Saugus loam, Yolo loam	No Data	N/A	N/A
K	5.1	5.2	YoC	Yolo loam	No Data	N/A	N/A
K	5.2	6.0	ScF2,YoC	Saugus loam, Yolo loam	No Data	N/A	N/A
K	6.0	6.1	ScF2	Saugus loam	No Data	N/A	N/A
K	6.1	6.2	OgF,ScF2	Ojai loam, Saugus loam	No Data	N/A	N/A
K	6.2	6.4	OgE,OgF,ScF2	Ojai loam, Saugus loam	No Data	N/A	N/A
K	6.4	6.5	OgC,OgE,OgF	Ojai loam	No Data	N/A	N/A
K	6.5	6.7	OgC,OgF	Ojai loam	No Data	N/A	N/A
K	6.7	6.8	OgF	Ojai loam	No Data	N/A	N/A
K	6.8	6.9	CzC,OgF,ScF2	Cortina cobbly sandy loam, Ojai loam, Saugus loam	No Data	N/A	N/A
K	6.9	7.0	OgE,OgF,ScF2	Ojai loam, Saugus loam	No Data	N/A	N/A
K	7.0	7.1	OgE,ScF2	Ojai loam, Saugus loam	No Data	N/A	N/A
K	7.1	7.3	OgC,ScF2	Ojai loam, Saugus loam	No Data	N/A	N/A
K	7.3	7.4	ScF2	Saugus loam	No Data	N/A	N/A
K	7.4	7.5	HcA,ScF2	Hanford sandy loam, Saugus loam	No Data	N/A	N/A
K	7.5	7.6	HcA	Hanford sandy loam	No Data	N/A	N/A
K	7.6	7.9	HcA,OgF	Hanford sandy loam, Ojai loam	No Data	N/A	N/A
K	7.9	8.4	OgF	Ojai loam	No Data	N/A	N/A
K	8.4	8.5	OgF,YoC	Ojai loam, Yolo loam	No Data	N/A	N/A
K	8.5	8.6	OgF,ScE,ScF,YoC	Ojai loam, Saugus loam, Yolo loam	No Data	N/A	N/A
K	8.6	8.7	ScE,ScF,YoC	Saugus loam, Yolo loam	No Data	N/A	N/A
K	8.7	8.9	ScE,ScF	Saugus loam	No Data	N/A	N/A
K	8.9	9.2	ScF	Saugus loam	No Data	N/A	N/A
K	9.2	9.4	MhF2,ScF	Millsholm rocky loam, Saugus loam	No Data	N/A	N/A
K	9.4	10.0	MhF2	Millsholm rocky loam	No Data	N/A	N/A
K	10.0	10.1	122,MhF2	Millsholm loam, Millsholm rocky loam	No Data	N/A	N/A
K	10.1	10.2	122,125,128	Millsholm holm, Rock outcrop-Friant complex, Saugus loam	No Data	N/A	N/A
K	10.2	10.3	125,128	Rock outcrop-Friant complex, Saugus loam	No Data	N/A	N/A
K	10.3	10.4	125,128,137	Rock outcrop-Friant complex, Saugus loam, Vista coarse sandy loam	No Data	N/A	N/A
K	10.4	11.0	137	Vista coarse sandy loam	No Data	N/A	N/A
K	11.0	11.1	108,137	Capistrano-Urban land complex, Vista coarse sandy loam	No Data	N/A	N/A
K	11.1	11.2	108,129,137	Capistrano-Urban land complex, Saugus loam, Vista coarse sandy loam	No Data	N/A	N/A

TABLE A-10 – IMPACT ASSESSMENT TABLE
Geologic Feature: Linear Extensibility Percent

Location			Feature			Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Linear Extensibility Percent	Initial	Residual
K	11.2	11.3	108,128,129	Capistrano-Urban land complex, Saugus loam	No Data	N/A	N/A
K	11.3	11.4	108,128	Capistrano-Urban land complex, Saugus loam	No Data	N/A	N/A
K	11.4	11.6	104,108,129	Balcom silty clay loam, Capistrano-Urban land complex, Saugus loam	No Data	N/A	N/A
K	11.6	11.7	104,128,129	Balcom silty clay loam, Saugus loam	No Data	N/A	N/A
K	11.7	11.8	128,129,143	Saugus loam, Xerorthents-Urban land-Saugus complex	No Data	N/A	N/A
K	11.8	11.9	128,143	Saugus loam, Xerorthents-Urban land-Saugus complex	No Data	N/A	N/A
K	11.9	12.0	108,109,110,128,143		No Data	N/A	N/A
K	12.0	12.1	104,108,109,110		No Data	N/A	N/A
K	12.1	12.2	104,109,110	Balcom silty clay loam, Chualar-Urban land complex, Conejo-Urban land complex	No Data	N/A	N/A
K	12.2	12.4	104	Balcom silty clay loam	No Data	N/A	N/A
K	12.4	12.5	104,109,110,132	Balcom silty clay loam, Chualar-Urban land complex, Conejo-Urban land complex, Soper gravelly sandy loam	No Data	N/A	N/A
K	12.5	12.7	109,110	Chualar-Urban land complex, Conejo-Urban land complex	No Data	N/A	N/A
K	12.7	12.8	104,109,110	Balcom silty clay loam, Chualar-Urban land complex, Conejo-Urban land complex	No Data	N/A	N/A
K	12.8	13.4	104	Balcom silty clay loam	No Data	N/A	N/A
K	13.4	13.5	104,109,110,123	Balcom silty clay loam, Chualar-Urban land complex, Conejo-Urban land complex, Mocho-Urban land complex	No Data	N/A	N/A
K	13.5	13.6	109,110,123	Chualar-Urban land complex, Conejo-Urban land complex, Mocho-Urban land complex	No Data	N/A	N/A
K	13.6	13.7	109,110	Chualar-Urban land complex, Conejo-Urban land complex	No Data	N/A	N/A
K	13.7	13.8	111,129	Conejo-Urban land complex, Saugus loam	No Data	N/A	N/A
K	13.8	14.0	111,129,132	Conejo-Urban land complex, Saugus loam, Soper gravelly sandy loam	No Data	N/A	N/A
K	14.0	14.1	111,129	Conejo-Urban land complex, Saugus loam	No Data	N/A	N/A
K	14.1	14.2	104129	Balcom silty clay loam, Saugus loam	No Data	N/A	N/A
K	14.2	14.3	104118,129	Balcom silty clay loam, Gazos silty clay loam, Saugus loam	No Data	N/A	N/A
K	14.3	14.4	104,113,118,129	Balcom silty clay loam, Cropley-Urban land complex, Gazos silty clay loam, Saugus loam	No Data, 7.5	H	L
K	14.4	14.6	113,118	Cropley-Urban land complex, Gazos silty clay loam	No Data, 7.5	H	L
K	14.6	14.9	118	Gazos silty clay loam	No Data	N/A	N/A
K	14.9	15.0	118,138	Gazos silty clay loam, Xerorthents	No Data	N/A	N/A
K	15.0	15.1	104,118,138	Balcom silty clay loam, Gazos silty clay loam, Xerorthents	No Data	N/A	N/A
K	15.1	15.2	104,118,133,138	Balcom silty clay loam, Gazos silty clay loam, Soper gravelly sandy loam, Xerorthents	No Data	N/A	N/A
K	15.2	15.3	118,133	Gazos silty clay loam, Soper gravelly sandy loam	No Data	N/A	N/A
K	15.3	15.4	104,113,118,133	Balcom silty clay loam, Cropley-Urban land complex, Gazos silty clay loam, Soper gravelly sandy loam	No Data, 7.5	H	L
K	15.4	15.4	104,113	Balcom silty clay loam, Cropley-Urban land complex	No Data, 7.5	H	L

Notes:
L – Low
M – Moderate
H – High
No – No impact
N/A – Not Applicable

TABLE A-11 – IMPACT ASSESSMENT TABLE
Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
A	0.0	0.6	104,	Arizo gravelly loamy sand	L	M	M	L
A	0.6	0.8	104,204,	Arizo gravelly loamy sand, Whitewolf loamy sand	L, L	M, H	H	L
A	0.8	0.9	104,	Arizo gravelly loamy sand	L	M	M	L
A	0.9	1.2	104,150,	Arizo gravelly loamy sand, Muroc sandy loam	L, L	M, H	H	L
A	1.2	1.4	150,	Muroc sandy loam	L	H	H	L
A	1.4	2.8	114,150,	Cajon loamy sand, Muroc sandy loam	L, L	H, M	H	L
A	2.8	3.0	104,114,	Arizo gravelly loamy sand, Cajon loamy sand	L, L	M, M	M	L
A	3.0	8.1	104,	Arizo gravelly loamy sand	L	M	M	L
A	8.1	8.3	104,114,	Arizo gravelly loamy sand, Cajon loamy sand	L, L	M, M	M	L
A	8.3	9.0	114,	Cajon loamy sand	L	M	M	L
A	9.0	9.1	104,114,	Arizo gravelly loamy sand, Cajon loamy sand	L, L	M, M	M	L
A	9.1	9.6	104,	Arizo gravelly loamy sand	L	M	M	L
A	9.6	10.1	104,116,	Arizo gravelly loamy sand, Cajon gravelly loamy sand	L, L	M, M	M	L
A	10.1	10.8	104,	Arizo gravelly loamy sand	L	M	M	L
A	10.8	10.9	104,116,	Arizo gravelly loamy sand, Cajon gravelly loamy sand	L, L	M, M	M	L
A	10.9	11.0	104,116,137,	Arizo gravelly loamy sand, Cajon gravelly loamy sand, Garlock loamy sand	L, L, L	M, M, H	H	L
A	11.0	11.2	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	L, L	M, H	H	L
A	11.2	11.3	137,	Garlock loamy sand	L	H	H	L
A	11.3	11.4	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	L, L	M, H	H	L
A	11.4	11.5	116,	Cajon gravelly loamy sand	L	M	M	L
A	11.5	11.6	104,116,	Arizo gravelly loamy sand, Cajon gravelly loamy sand	L, L	M, M	M	L
A	11.6	11.7	104,	Arizo gravelly loamy sand	L	M	M	L
A	11.7	11.8	104,137,	Arizo gravelly loamy sand, Garlock loamy sand	L, L	M, H	H	L
A	11.8	12.0	137,	Garlock loamy sand	L	H	H	L
A	12.0	12.6	114,137,	Cajon loamy sand, Garlock loamy sand	L, L	M, H	H	L
A	12.6	12.7	137,	Garlock loamy sand	L	H	H	L
A	12.7	12.8	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	L, L	M, H	H	L
A	12.8	13.1	116,	Cajon gravelly loamy sand	L	M	M	L
A	13.1	13.2	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	L, L	M, M	M	L
A	13.2	13.2	114,	Cajon loamy sand	L	M	M	L
B	0.0	0.2	114,	Cajon loamy sand	L	M	M	L
B	0.2	0.3	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	L, L	M, M	M	L
B	0.3	0.4	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	L, L	M, H	H	L
B	0.4	0.8	137,	Garlock loamy sand	L	H	H	L
B	0.8	1.1	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	L, L	M, H	H	L
B	1.1	1.3	116,	Cajon gravelly loamy sand	L	M	M	L
B	1.3	1.4	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	L, L	M, H	H	L
B	1.4	1.6	137,	Garlock loamy sand	L	H	H	L

TABLE A-11 – IMPACT ASSESSMENT TABLE
Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
B	1.6	1.7	114,116,137,	Cajon loamy sand, Cajon gravelly loamy sand, Garlock loamy sand	L, L, L	M, M, H	H	L
B	1.7	2.6	116,	Cajon gravelly loamy sand	L	M	M	L
B	2.6	2.9	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	L, L	M, M	M	L
B	2.9	3.3	114,	Cajon loamy sand	L	M	M	L
B	3.3	3.4	114,137,	Cajon loamy sand, Garlock loamy sand	L, L	M, H	H	L
B	3.4	3.5	137,	Garlock loamy sand	L	H	H	L
B	3.5	3.8	113,137,	Cajon sand, Garlock loamy sand	L, L	M, H	H	L
B	3.8	4.0	137,	Garlock loamy sand	L	H	H	L
B	4.0	4.2	113,137,	Cajon sand, Garlock loamy sand	L, L	M, H	H	L
B	4.2	4.3	113,	Cajon sand	L	M	M	L
B	4.3	4.5	113,137,	Cajon sand, Garlock loamy sand	L, L	M, H	H	L
B	4.5	4.6	113,116,	Cajon sand, Cajon gravelly loamy sand	L, L	M, H	H	L
B	4.6	4.7	116,	Cajon gravelly loamy sand	L	H	H	L
B	4.7	4.8	113,116,	Cajon gravelly loamy sand	L, L	M, H	H	L
B	4.8	5.3	113,	Cajon sand	L	M	M	L
B	5.3	5.5	113,114,	Cajon sand, Cajon loamy sand	L, L	M, M	M	L
B	5.5	5.8	114,	Cajon loamy sand	L	M	M	L
B	5.8	6.0	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	L, L	M, M	M	L
B	6.0	6.2	116,	Cajon gravelly loamy sand	L	M	M	L
B	6.2	6.3	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	L, L	M, M	M	L
B	6.3	6.4	114,	Cajon loamy sand	L	M	M	L
B	6.4	6.5	114,137,	Cajon loamy sand, Garlock loamy sand	L, L	M, H	H	L
B	6.5	6.6	137,	Garlock loamy sand	L	H	H	L
B	6.6	7.2	114,137,	Cajon loamy sand, Garlock loamy sand	L, L	M, H	H	L
B	7.2	11.4	114,	Cajon loamy sand	L	M	M	L
B	11.4	11.5	114,171,	Cajon loamy sand, Rosamond clay loam	L, L	M, H	H	L
B	11.5	11.6	114,137,171,	Cajon loamy sand, Garlock loamy sand, Rosamond clay loam	L, L, L	M, H, H	H	L
B	11.6	11.8	137,	Garlock loamy sand	L	H	H	L
B	11.8	11.9	114,137,	Cajon loamy sand, Garlock loamy sand	L, L	M, H	H	L
B	11.9	12.0	114,137,171,	Cajon loamy sand, Garlock loamy sand, Rosamond clay loam	L, L, L	M, H, H	H	L
B	12.0	12.1	114,171,	Cajon loamy sand, Rosamond clay loam	L, L	M, H	H	L
B	12.1	12.2	171,	Rosamond clay loam	L	H	H	L
B	12.2	12.3	114,171,	Cajon loamy sand, Rosamond clay loam	L, L	M, H	H	L
B	12.3	13.4	114,	Cajon loamy sand	L	M	M	L
B	13.4	13.6	114,125,	Cajon loamy sand, DeStazo sandy loam	L, L	M, H	H	L
B	13.6	13.8	114,	Cajon loamy sand	L	M	M	L
B	13.8	14.2	114,125,	Cajon loamy sand, DeStazo sandy loam	L, L	M, H	H	L
B	14.2	14.9	125,	DeStazo sandy loam	L	H	H	L
B	14.9	15.1	125,126,	DeStazo sandy loam, DeStazo sandy loam	L, L	H, H	H	L
B	15.1	15.3	125,	DeStazo sandy loam	L	H	H	L
B	15.3	15.4	112,125,	Badland- Orthents Complex, DeStazo sandy loam	No Data, L	No Data, H	H	L
B	15.4	15.7	112,	Badland- Orthents Complex	No Data	No Data	N/A	L
B	15.7	15.8	112,114,CaC,RzF,	Badland- Orthents Complex, Cajon loamy sand, Rough broken land	No Data, L	L data, M	M	L
B	15.8	15.9	114,CaC,HkB,RzF ,	Cajon loamy sand	L	M	M	L
B	15.9	16.0	CaC,HkB,Rp,	Cajon loamy sand, Hesperia fine sandy loam, Rosamond loam	L, L, L	M, H, H	H	L
B	16.0	16.2	HkB,Rp,	Heperia fine sandy loam, Rosamond loam	L, L	H, H	H	L

TABLE A-11 – IMPACT ASSESSMENT TABLE
Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
B	16.2	16.4	Rp,	Rosamond loam	L	H	H	L
B	16.4	16.5	HkB,Ro,Rp,	Hesperia fine sandy loam, Rosamond fine sandy loam, Rosamond loam	L, L, L	H, H, H	H	L
B	16.5	16.7	HkB,Ro,	Hesperia fine sandy loam, Rosamond fine sandy loam	L, L	H, H	H	L
B	16.7	16.9	Ro,Rp,	Rosamond fine sandy loam, Rosamond loam	L, L	H, H	H	L
B	16.9	17.0	HkA,Ro,Rp,	Hesperia fine sandy loam, Rosamond fine sandy loam, Rosamond loam	L, L, L	H, H, H	H	L
B	17.0	17.1	HkA,Rp,	Hesperia fine sandy loam, Rosamond loam	L, L	H, H	H	L
B	17.1	17.2	Rp,	Rosamond loam	L	H	H	L
B	17.2	17.3	Rp,Sv,	Rosamond loam, Sunrise sandy loam	L, L	H, H	H	L
B	17.3	17.4	HkA,Rp,Sv,	Hesperia fine sandy loam, Rosamond loam, Sunrise sandy loam	L, L, L	H, H, H	H	L
B	17.4	17.5	HkA,Sv,Sw,	Hesperia fine sandy loam, Sunrise sandy loam, Sunrise sandy loam shallow	L, L, L	H, H, H	H	L
B	17.5	17.6	HkA,Sw,	Hesperia fine sandy loam, Sunrise sandy loam shallow	L, L	H, H	H	L
B	17.6	18.0	Sv,Sw,	Sunrise sandy loam, Sunrise sandy loam shallow	L, L	H, H	H	L
B	18.0	18.1	Sv,	Sunrise sandy loam	L	H	H	L
B	18.1	18.2	Sv,Sw,Sx,	Sunrise sandy loam, Sunrise sandy loam shallow, Sunrise loam	L, L, L	H, H, H	H	L
B	18.2	18.5	Sw,Sx,	Sunrise sandy loam shallow, Sunrise loam	L, L	H, H	H	L
B	18.5	18.7	Sv,Sw,	Sunrise sandy loam, Sunrise sandy loam shallow	L, L	H, H	H	L
B	18.7	19.0	Ro,Sw,	Rosamond fine sandy loam, Sunrise sandy loam shallow	L, L	H, H	H	L
B	19.0	19.1	Ro,Rp,Sv,Sw,	Rosamond fine sandy loam, Rosamond loam, Sunrise sandy loam, Sunrise sandy loam shallow	L, L, L, L	H, H, H, H	H	L
B	19.1	19.3	Rp,Sv,	Rosamond loam, Sunrise sandy loam	L, L	H, H	H	L
B	19.3	19.6	Sv,	Sunrise sandy loam	L	H	H	L
B	19.6	19.7	HgA,Sv,	Hesperia loamy fine sand, Sunrise sandy loam	L, L	H, H	H	L
B	19.7	19.8	HgA,	Hesperia loamy fine sand	L,	H	H	L
B	19.8	19.9	HgA,Ro,	Hesperia loamy fine sand, Rosamond fine sandy loam	L, L	H, H	H	L
B	19.9	20.0	Ro,	Rosamond fine sandy loam	L	H	H	L
B	20.0	20.1	Ro,Rp,	Rosamond fine sandy loam, Rosamond loam	L, L	H, H	H	L
B	20.1	20.2	Rp,	Rosamond loam	L	H	H	L
B	20.2	20.3	Ro,Rp,	Rosamond fine sandy loam, Rosamond loam	L, L	H, H	H	L
B	20.3	20.4	Ro,	Rosamond find sandy loam	L	H	H	L
B	20.4	20.5	Rm2,Ro,Rp,	Rosamond loamy fine sand hummocky, Rosamond fine sandy loam, Rosamond loam	L, L, L	H, H, H	H	L
B	20.5	20.6	Rm2,Rp,	Rosamond loamy fine sand hummocky, Rosamond loam	L, L	H, H	H	L
B	20.6	20.7	HgA,Rm2,Rp,	Hesperia loamy fine sand, Rosamond loamy fine sand hummocky, Rosamond loam	L, L, L	H, H, H	H	L
B	20.7	20.9	HgA,Ro,	Hesperia loamy fine sand, Rosamond fine sandy loam	L, L	H, H	H	L
B	20.9	21.1	Ro,Rp,	Rosamond fine sandy loam, Rosamond loam	L, L	H, H	H	L
B	21.1	21.2	Ro,	Rosamond fine sandy loam	L	H	H	L
B	21.2	21.3	Rm2,Ro,	Rosamond loamy fine sand hummocky, Rosamond fine sandy loam	L, L	H, H	H	L
B	21.3	21.4	Rm,Rm2,	Rosamond loamy fine sand, Rosamond loamy fine sand hummocky	L, L	H, H	H	L
B	21.4	21.6	Rm,Rp,	Rosamond loamy fine sand, Rosamond loam	L, L	H, H	H	L

TABLE A-11 – IMPACT ASSESSMENT TABLE
Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
B	21.6	22.0	Ro,Rp,	Rosamond fine sandy loam, Rosamond loam	L, L	H, H	H	L
B	22.0	22.3	Ro,Rt,	Rosamond fine sandy loam, Rosamond silty clay loam	L, L	H, H	H	L
B	22.3	22.4	HcA,Rt,	Hanford sandy loam, Rosamond silty clay loam	L, L	L, H	H	L
B	22.4	22.5	HcA,HkA,	Hanford sandy loam, Hesperia fine sandy loam	L, L	L, H	H	L
B	22.5	23.0	HkA,	Hesperia fine sandy loam	L	H	H	L
B	23.0	23.2	GsA,HkA,	Greenfield sandy loam, Hesperia fine sandy loam	L, L	L, H	H	L
B	23.2	23.4	GsA,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	L, L	L, L	L	L
B	23.4	23.7	HbA,	Hanford coarse sandy loam	L	L	L	L
B	23.7	23.8	GsA,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	L, L	L, L	L	L
B	23.8	23.9	GsA,GsC,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	L, L, L	L, L, L	L	L
B	23.9	24.0	GsA,GsC,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	L, L, M	L, L, M	M	L
B	24.0	24.2	RcA,	Ramona coarse sandy loam	M	M	M	L
B	24.2	24.3	HbA,RcA,	Hanford coarse sandy loam, Ramona coarse sandy loam	L, M	L, M	M	L
B	24.3	24.5	HbA,	Hanford coarse sandy loam	L	L	L	L
B	24.5	24.7	GsC,HbA,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	L, L, L	L, L, L	L	L
B	24.7	24.8	GsC,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	L, L	L, L	L	L
B	24.8	24.9	GsA,GsC,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	L, L, L	L, L, L	L	L
B	24.9	25.0	GsA,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	L, L	L, L	L	L
B	25.0	25.7	GsA,	Greenfield sandy loam	L	L	L	L
B	25.7	25.8	GsA,HbA,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	L, L, L	L, L, L	L	L
B	25.8	25.9	GsC,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	L, L	L, L	L	L
B	25.9	26.2	GsC	Greenfield sandy loam	L	L	L	L
B	26.2	26.4	GsC2,	Greenfield sandy loam	L	L	L	L
B	26.4	26.5	GsC	Greenfield sandy loam	L	L	L	L
C	0.0	0.2	114,	Cajon loamy sand	L	M	M	L
C	0.2	0.3	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	L, L	M, M	M	L
C	0.3	0.4	114,116,137,	Cajon loamy sand, Cajon gravelly loamy sand, Garlock loamy sand	L, L	M, M	M	L
C	0.4	0.5	114,137,	Cajon loamy sand	L, L	M, H	H	L
C	0.5	0.6	114,116,137,	Cajon loamy sand, Cajon gravelly loamy sand, Garlock loamy sand	L, L, L	M, M, H	H	L
C	0.6	1.0	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	L, L	M, H	H	L
C	1.0	1.1	137,	Garlock loamy sand	L	H	H	L
C	1.1	1.3	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	L, L	M, H	H	L
C	1.3	1.5	137,	Garlock loamy sand	L	H	H	L
C	1.5	1.7	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	L, L	M, H	H	L
C	1.7	1.8	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	L, L	M, H	H	L

TABLE A-11 – IMPACT ASSESSMENT TABLE

Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
C	1.8	2.0	137,	Garlock loamy sand	L	H	H	L
C	2.0	2.1	116,137,	Cajon loamy sand, Garlock loamy sand	L, L	M, H	H	L
C	2.1	2.2	114,116,137,	Cajon loamy sand, Cajon gravelly loamy sand, Garlock loamy sand	L, L, L	M, M, H	H	L
C	2.2	2.5	114,	Cajon loamy sand	L	M	M	L
C	2.5	2.7	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	L, L	M, M	M	L
C	2.7	2.8	116,	Cajon gravelly loamy sand	L	M	M	L
C	2.8	3.1	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	L, L	M, M	M	L
C	3.1	3.2	116,	Cajon gravelly loamy sand	L	M	M	L
C	3.2	3.3	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	L, L	M, M	M	L
C	3.3	3.8	114,	Cajon loamy sand	L	M	M	L
C	3.8	4.0	114,137,	Cajon loamy sand, Garlock loamy sand	L, L	M, H	H	L
C	4.0	4.2	137,	Garlock loamy sand	L	H	H	L
C	4.2	4.3	114,137,	Cajon loamy sand, Garlock loamy sand	L, L	M, H	H	L
C	4.3	4.4	114,	Cajon loamy sand	L	M	M	L
C	4.4	4.5	114,137,	Cajon loamy sand, Garlock loamy sand	L, L	M, H	H	L
C	4.5	4.7	114,	Cajon loamy sand	L	M	M	L
C	4.7	4.8	114,137,	Cajon loamy sand, Garlock loamy sand	L, L	M, H	H	L
C	4.8	5.0	116,137,	Cajon gravelly loamy sand, Garlock loamy sand	L, L	M, H	H	L
C	5.0	5.1	116,	Cajon gravelly loamy sand	L	M	M	L
C	5.1	5.2	114,116,	Cajon loamy sand	L, L	M, M	M	L
C	5.2	5.7	114,	Cajon loamy sand, Cajon gravelly loamy sand	L	M	M	L
C	5.7	5.8	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	L, L	M, M	M	L
C	5.8	5.9	116,	Cajon gravelly loamy sand, Garlock loamy sand	L	M	M	L
C	5.9	6.0	116,137,	Cajon gravelly loamy sand	L, L	M, H	H	L
C	6.0	6.1	114,137,	Cajon loamy sand, Garlock loamy sand	L, L	M, H	H	L
C	6.1	7.9	114,	Cajon loamy sand	L	M	M	L
C	7.9	8.1	114,137,	Cajon loamy sand, Garlock loamy sand	L, L	M, H	H	L
C	8.1	8.6	114,	Cajon loamy sand	L	M	M	L
C	8.6	8.7	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	L, L	M, M	M	L
C	8.7	9.0	116,	Cajon gravelly loamy sand	L	M	M	L
C	9.0	9.1	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	L, L	M, M	M	L
C	9.1	9.8	114,	Cajon loamy sand	L	M	M	L
C	9.8	9.9	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	L, L	M, M	M	L
C	9.9	10.2	116,	Cajon gravelly loamy sand	L	M	M	L
C	10.2	10.4	114,116,	Cajon loamy sand, Cajon gravelly loamy sand	L, L	M, M	M	L
C	10.4	10.5	116,	Cajon gravelly loamy sand	L	M	M	L
C	10.5	10.7	116,CaC,	Cajon gravelly loamy sand	L	M	M	L
C	10.7	11.7	CaC,	Cajon loamy sand	L	M	M	L
C	11.7	12.1	AaB,CaC,	Adelanto loamy sand, Cajon loamy sand	L, L	M, H	H	L
C	12.1	12.2	CaC,	Cajon loamy sand	L	M	M	L
C	12.2	12.4	AaB,CaC,	Adelanto loamy sand, Cajon loamy sand	L, L	H, M	H	L
C	12.4	13.3	AaB,	Adelanto loamy sand	L	H	H	L
C	13.3	13.4	AaB,CaC,HbC,	Adelanto loamy sand, Cajon loamy sand, Hanford coarse sandy loam	L, L, L	M, H, L	H	L

TABLE A-11 – IMPACT ASSESSMENT TABLE

Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
C	13.4	13.6	CaC,HbC,	Cajon loamy sand, Hanford coarse sandy loam	L, L	M, L	M	L
C	13.6	13.7	CaC,HbC,	Cajon loamy sand, Hanford coarse sandy loam	L, L	M, L	M	L
C	13.7	14.1	HbC,	Hanford coarse sandy loam	L	L	L	L
C	14.1	14.4	HbC,HkB,	Hanford coarse sandy loam, Hesperia fine sandy loam	L, L	L, H	H	L
C	14.4	14.5	CaC,HkB,	Cajon loamy sand, Hesperia fine sandy loam	L, L	M, H	H	L
C	14.5	14.6	CaC,HbC,HkB,	Cajon loamy sand, Hanford coarse sandy loam, Hesperia fine sandy loam	L, L, L	M, L, H	H	L
C	14.6	14.8	CaC,HbC,	Cajon loamy sand, Hanford coarse sandy loam	L, L	M, L	M	L
C	14.8	15.9	HbC,	Hanford coarse sandy loam	L	L	L	L
C	15.9	16.1	GsC,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	L, L	L, L	L	L
C	16.1	16.2	CaC,HbC,	Cajon loamy sand, Hanford coarse sandy loam	L, L	M, L	M	L
C	16.2	17.5	CaC,	Cajon loamy sand	L	M	M	L
C	17.5	17.6	CaC,HdC,HkB,	Cajon loamy sand, Hanford gravelly sandy loam, Hesperia fine sandy loam	L, L, L	M, L, H	H	L
C	17.6	18.3	HdC,HkB,	Hanford gravelly sandy loam, Hesperia fine sandy loam	L, L	L, H	H	L
C	18.3	18.4	HdC,HkB,	Hanford gravelly sandy loam, Hesperia fine sandy loam	L, L	L, H	H	L
C	18.4	18.5	HdC,	Hanford gravelly sandy loam	L	L	L	L
C	18.5	18.8	AsB,HdC,	Arizo gravelly loamy sand, Hanford gravelly sandy loam	L, L	M, L	M	L
C	18.8	19.5	AsB,	Arizo gravelly loamy sand	L	M	M	L
C	19.5	19.7	AsB,CaC,	Arizo gravelly loamy sand, Cajon loamy sand	L, L	M, M	M	L
C	19.7	19.8	CaC,ReC,	Cajon loamy sand, Ramona gravelly sandy loam	L, M	M, M	M	L
C	19.8	20.1	CaC,	Cajon loamy sand	L	M	M	L
C	20.1	20.4	AsB,CaC,	Arizo gravelly loamy sand, Cajon loamy sand	L, L	M, M	M	L
C	20.4	20.6	CaC,	Cajon loamy sand	L	M	M	L
C	20.6	20.8	CaC,HbC,RdE2,	Cajon loamy sand, Hanford coarse sandy loam, Ramona sandy loam	L, L, M	M, L, M	M	L
C	20.8	21.4	HbC,	Hanford coarse sandy loam	L	L	L	L
C	21.4	21.5	CaC,HbC,	Cajon loamy sand, Hanford coarse sandy loam	L, L	M, L	M	L
C	21.5	21.7	CaC,	Cajon loamy sand	L	M	M	L
D	0.0	0.6	CaC,	Cajon loamy sand	L	M	M	L
D	0.6	0.7	CaC,RdE2,	Cajon loamy sand, Ramona sandy loam	L, M	M, M	M	L
D	0.7	0.8	CaC,HkB,RdE2,	Cajon loam sand, Hesperia fine sandy loam, Ramona sandy loam	L, L, M	M, H, M	H	L
D	0.8	0.9	CaC,HkB,	Cajon loamy sand, Hesperia fine sandy loam	L, L	M, H	H	L
D	0.9	1.0	CaC,HkB,	Cajon loamy sand, Hesperia fine sandy loam	L, L	M, H	H	L
D	1.0	1.2	HkB,	Hesperia fine sandy loam	L	H	H	L
D	1.2	1.4	HbC,HkB,	Hanford coarse sandy loam, Hesperia fine sandy loam	L, L	L, H	H	L
D	1.4	1.7	HbC,RdE2,	Hanford coarse sandy loam, Ramona sandy loam	L, L	L, M	M	L
D	1.7	1.8	HbC,RdE2,	Hanford coarse sandy loam, Ramona sandy loam	L, L	L, M	M	L
D	1.8	1.9	HbC,	Hanford coarse sandy loam	L	L	L	L

TABLE A-11 – IMPACT ASSESSMENT TABLE
Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
D	1.9	2.4	HbC,RdE2,	Hanford coarse sandy loam, Ramona sandy loam	L, L	L, M	M	L
D	2.4	2.5	HbC,	Hanford coarse sandy loam	L	L	L	L
D	2.5	2.7	HbC,HkB,	Hanford coarse sandy loam, Hesperia fine sandy loam	L, L	L, H	H	L
D	2.7	2.8	GsC,HkB,	Greenfield sandy loam, Hesperia fine sandy loam	L, L	L, H	H	L
D	2.8	3.1	GsC	Greenfield sandy loam	L	L	L	L
D	3.1	3.3	GsC,HaB2,	Greenfield sandy loam, Hanford loamy sand	L, L	L, L	L	L
D	3.3	3.5	GsC	Greenfield sandy loam	L	L	L	L
D	3.5	3.7	GsC,HbC,	Greenfield sandy loam, Hanford coarse sandy loam	L, L	L, L	L	L
D	3.7	3.9	HbC,	Hanford coarse sandy loam	L	L	L	L
D	3.9	4.2	HaB2,HbC,	Hanford loamy sand, Hanford coarse sandy loam	L, L	L, L	L	L
D	4.2	4.4	HaB2,	Hanford loamy sand	L	L	L	L
D	4.4	4.5	HaB2,HbC,	Hanford loamy sand, Hanford coarse sandy loam	L, L	L, L	L	L
D	4.5	6.1	HbC,	Hanford coarse sandy loam	L	L	L	L
D	6.1	6.2	HbC,HcC,	Hanford coarse sandy loam, Hanford sandy loam	L, L	L, L	L	L
D	6.2	6.5	HcC,	Hanford sandy loam	L	L	L	L
D	6.5	6.7	HbC,HcC,	Hanford coarse sandy loam, Hanford sandy loam	L, L	L, L	L	L
D	6.7	7.4	HbC,	Hanford coarse sandy loam	L	L	L	L
D	7.4	7.5	HbC,HbD,	Hanford coarse sandy loam	L, L	L, L	L	L
D	7.5	7.6	HbC,HbD,HcC,	Hanford coarse sandy loam, Hanford sandy loam	L, L, L	L, L, L	L	L
D	7.6	7.7	HbC,HcC,	Hanford coarse sandy loam, Hanford sandy loam	L, L	L, L	L	L
D	7.7	7.9	HcC,	Hanford coarse sandy loam	L	L	L	L
D	7.9	8.0	HaB2,HcC,	Hanford loamy sand, Hanford sandy loam			L	L
D	8.0	8.5	HaB2,	Hanford loamy sand	L	L	L	L
D	8.5	8.6	HaB2,HbC,	Hanford loamy sand, Hanford coarse sandy loam	L, L	L, L	L	L
D	8.6	8.7	HaB2,HbC,HcC,	Hanford loamy sand, Hanford coarse sandy loam, Hanford sandy loam	L, L, L	L, L, L	L	L
D	8.7	8.8	HbC,HcC,	Hanford coarse sandy loam, Hanford sandy loam	L, L	L, L	L	L
D	8.8	9.3	HcC,	Hanford coarse sandy loam	L	L	L	L
D	9.3	9.7	HaB2,HbC,HcC,	Hanford loamy sand, Hanford coarse sandy loam, Hanford sandy loam	L, L, L	L, L, L	L	L
D	9.7	9.8	HaB2,HbC,	Hanford loam sand, Hanford coarse sandy loam	L, L	L, L	L	L
D	9.8	9.9	DuD,HaB2,	Dune land, Hanford loamy sand	No Data, L	No Data, L	L	L
D	9.9	10.0	DuD,	Dune land	No Data	No Data	N/A	L
D	10.0	10.2	DuD,HaB2,	Dune land, Hanford loamy sand	No Data, L	No Data, L	L	L
D	10.2	10.3	HaB2,	Hanford loamy sand	L	L	L	L
D	10.3	10.4	DuD,HaB2,	Dune land, Hanford loamy sand	No Data, L	No Data, L	L	L
D	10.4	10.7	DuD,	Dune land	No Data	No Data	N/A	L
D	10.7	10.8	DuD,HaB2,	Dune land, Hanford loamy sand	No Data, L	No Data, L	L	L
D	10.8	10.9	DuD,HaB2,VbA,	Dune land, Hanford loamy sand, Vernalis loam	No Data, L, L	No Data, L, H	H	L
D	10.9	11.2	VbA,	Vernalis loam	L	H	H	L
D	11.2	11.4	HcC,VbA,VcA,	Hanford sandy loam, Vernalis loam, Vernalis clay loam	L, L, L	L, H, H	H	L
D	11.4	13.1	HcC,	Hanford sandy loam	L	L	L	L

TABLE A-11 – IMPACT ASSESSMENT TABLE
Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
D	13.1	13.3	HcC,ObC,	Hanford sandy loam, Oak Glen sandy loam	L, L	L, L	L	L
D	13.3	13.4	ObC,	Oak Glen sandy loam	L	L	L	L
D	13.4	13.5	ObC,VbB,	Oak Glen sandy loam, Vernalis loam	L, L	L, H	H	L
D	13.5	13.6	ObC,VbA,VbB,	Oak Glen sandy loam, Vernalis loam	L, L	L, H	H	L
D	13.6	13.7	VbA,VbB,	Vernalis loam	L	H	H	L
D	13.7	14.0	VbB,	Vernalis loam	L	H	H	L
D	14.0	14.4	ObC,VbB,	Oak Glen sandy loam, Vernalis loam	L, L	L, H	H	L
D	14.4	14.5	ObC,OdC,VbB,	Oak Glen sandy loam, Oak Glen loam, Vernalis Loam	L, L, L	L, L, H	H	L
D	14.5	14.7	OdC,VbB,	Oak Glen loam, Vernalis Loam	L, L	L, H	H	L
D	14.7	15.4	OdC,	Oak Glen loam	L	L	L	L
D	15.4	15.6	OcC,OdC,	Oak Glen gravelly sandy loam, Oak Glen loam	L, L	L, L	L	L
D	15.6	15.7	OdC,RcC,VbA,	Oak Glen loam, Ramona coarse sandy loam, Vernalis loam	L, M, L	L, M, H	H	L
D	15.7	15.9	OdC,VbA,	Oak Glen loam, Vernalis Loam	L, L	L, H	H	L
D	15.9	16.3	OdC,	Oak Glen loam	L	L	L	L
D	16.3	16.5	OdC,TrF,	Oak Glen loam, Temescal-Rock land complex	L, L	L, L	L	L
D	16.5	16.6	OaC,OdC,TrF,	Oakdale sandy loam, Oak Glen loam, Temescal-Rock land complex	L, L, L	L, L, L	L	L
D	16.6	16.7	OaC,OdC,ReC,	Oakdale sandy loam, Oak Glen loam, Ramona gravelly sandy loam	L, L, M	L, L, M	M	L
D	16.7	16.8	OaC,ReC,	Oakdale sandy loam, Ramona gravelly sandy loam	L, M	L, M	M	L
D	16.8	17.1	ReC,	Ramona gravelly sandy loam	M	M	M	L
D	17.1	17.2	ReC,TrF,	Ramona gravelly sandy loam, Temescal-Rock land complex	M, L	M, L	M	L
D	17.2	17.5	ReC,	Ramona gravelly sandy loam	M	M	M	L
D	17.5	17.6	Co,ReC,	Chino loam, Ramona gravelly sandy loam	L, M	H, M	H	L
D	17.6	17.7	Co,MhF2,ReC,	Chino loam, Millsholm rocky loam, Ramona gravelly sandy loam	L, L, M	H, L, M	H	L
D	17.7	17.9	MhF2,ReC,	Millsholm rocky loam, Ramona gravelly sandy loam	L, M	L, M	M	L
D	17.9	18.0	MhF2,OdC,ReC,	Millsholm rocky loam, Oak Glen loam, Ramona gravelly sandy loam	L, L, M	L, L, M	M	L
D	18.0	18.7	OdC,RcC,	Oak Glen loam, Ramona coarse sandy loam	L, M	L, M	M	L
D	18.7	18.8	RcC,	Ramona coarse sandy loam	M	M	M	L
D	18.8	19.2	OdC,RcC,	Oak Glen loam, Ramona coarse sandy loam	L, M	L, M	M	L
D	19.2	19.5	MhF2,OdC,	Millsholm rocky loam, Oak Glen loam	L, L	L, L	L	L
D	19.5	20.4	OdC,	Oak Glen loam	L	L	L	L
D	20.4	20.5	GoF2,OdC,	Gorman sandy loam, Oak Glen loam	M, L	M, L	M	L
D	20.5	20.6	GoF2,OcC,OdC,	Gorman sandy loam, Oak Glen gravelly sandy loam, Oak Glen loam	M, L, L	M, L, L	M	L
D	20.6	20.8	GoF2,OcC,	Gorman sandy loam, Oak Glen gravelly sandy loam	M, L	M, L	M	L
D	20.8	20.9	GoF2,GuF,OcC,	Gorman sandy loam, Gullied land, Oak Glen gravelly sandy loam	M, No Data, L	M, No Data, L	M	L
D	20.9	21.0	GuF,OcC,	Gullied land, Oak Glen gravelly sandy loam	No Data, L	No Data, L	L	L
D	21.0	21.1	GoD2,GuF,OcC,	Gorman sandy loam, Gullied land, Oak Glen gravelly sandy loam	M, No Data, L	M, No Data, L	M	L
D	21.1	21.2	GoE2,GuF,ObC,	Gorman sandy loam, Gullied land, Oak Glen sandy loam	M, No Data, L	M, No Data, L	M	L
D	21.2	21.3	GoD2,GoE2,GuF,	Gorman sandy loam, Gullied land	M, M, No Data	M, M, No Data	M	L
D	21.3	21.4	GoD2,GoF2,GuF,	Gorman sandy loam, Gullied land	M, M, No Data	M, M, No Data	M	L

TABLE A-11 – IMPACT ASSESSMENT TABLE

Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
D	21.4	21.5	GoD2,GoF2,	Gorman sandy loam	M, M	M, M	M	L
D	21.5	21.6	GoF2,	Gorman sandy loam	M	M	M	L
D	21.6	21.7	GoF2,GuF,	Gorman sandy loam, Gullied land	M, No Data	M, No Data	M	L
D	21.7	21.9	GoD2,GoE2,GoF2,GuF,	Gorman sandy loam, Gullied land	M, M, M, No Data	M, M, M, No Data	M	L
D	21.9	22.0	GoE2,GoF2,	Gorman sandy loam	M, M	M, M	M	L
D	22.0	22.2	GoD2,GoF2,	Gorman sandy loam	M, M	M, M	M	L
D	22.2	22.5	GoE2,GoF2,	Gorman sandy loam	M, M	M, M	M	L
D	22.5	22.8	GoE2,GoF2,GuF,	Gorman sandy loam, Gullied land	M, M, M, No Data	M, M, M, No Data	M	L
D	22.8	22.9	GoF2,GuF,RzF,	Gorman sandy loam, Gullied land, Rough broken land	M, No Data	M, No Data	M	L
D	22.9	23.0	GuF,RzF,	Gullied land, Rough broken land	No Data	No Data	N/A	L
D	23.0	23.1	GuF,	Gullied land	No Data	No Data	N/A	L
D	23.1	23.3	75,GuF,	Trigo-Calleguas families-Haploxeralfs complex, Gullied land	No Data	No Data	N/A	L
D	23.3	23.6	75,	Trigo-Calleguas families-Haploxeralfs complex	No Data	No Data	N/A	L
D	23.6	23.8	75,GuF,	Trigo-Calleguas families-Haploxeralfs complex, Gullied land	No Data	No Data	N/A	L
D	23.8	24.2	75,	Trigo-Calleguas families-Haploxeralfs complex	No Data	No Data	N/A	L
D	24.2	25.0	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	No Data	No Data	N/A	L
D	25.0	25.1	75,	Trigo-Calleguas families-Haploxeralfs complex	No Data	No Data	N/A	L
D	25.1	25.4	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	No Data	No Data	N/A	L
D	25.4	26.0	75,	Trigo-Calleguas families-Haploxeralfs complex	No Data	No Data	N/A	L
D	26.0	26.2	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	No Data	No Data	N/A	L
D	26.2	26.6	74,	Trigo-Calleguas families-Rock outcrop complex	No Data	No Data	N/A	L
D	26.6	26.9	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	No Data	No Data	N/A	L
D	26.9	28.2	75,	Trigo-Calleguas families-Haploxeralfs complex	No Data	No Data	N/A	L
D	28.2	28.5	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	No Data	No Data	N/A	L
D	28.5	28.8	75,	Trigo-Calleguas families-Haploxeralfs complex	No Data	No Data	N/A	L
D	28.8	28.9	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	No Data	No Data	N/A	L
D	28.9	29.6	75,	Trigo-Calleguas families-Haploxeralfs complex	No Data	No Data	N/A	L
D	29.6	29.8	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	No Data	No Data	N/A	L
D	29.8	30.2	74,	Trigo-Calleguas families-Rock outcrop complex	No Data	No Data	N/A	L

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TABLE A-11 – IMPACT ASSESSMENT TABLE

Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
D	30.2	30.4	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	No Data	No Data	N/A	L
D	30.4	30.7	75,		No Data	No Data	N/A	L
D	30.7	30.9	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	No Data	No Data	N/A	L
D	30.9	31.2	74,	Trigo-Calleguas families-Rock outcrop complex	No Data	No Data	N/A	L
D	31.2	31.3	74,75,	Trigo-Calleguas families-Rock outcrop complex, Trigo-Calleguas families-Haploxeralfs complex	No Data	No Data	N/A	L
D	31.3	32.7	75,	Trigo-Calleguas families-Haploxeralfs complex	No Data	No Data	N/A	L
D	32.7	32.8	72,75,	Osito-Trigo families complex, Trigo-Calleguas families-Haploxeralfs complex	No Data	No Data	N/A	L
D	32.8	34.7	72,	Osito-Trigo families complex	No Data	No Data	N/A	L
D	34.7	35.0	72,82,	Osito-Trigo families complex, Vertic Xerochrepts	No Data	No Data	N/A	L
D	35.0	36.3	82,	Vertic Xerochrepts	No Data	No Data	N/A	L
D	36.3	36.5	72,82,	Osito-Trigo families complex, Vertic Xerochrepts	No Data	No Data	N/A	L
D	36.5	37.2	72,	Osito-Trigo families complex	No Data	No Data	N/A	L
D	37.2	37.3	72,75,MhF2,	Osito-Trigo families complex, Trigo-Calleguas families-Haploxeralfs complex, Millsholm rocky loam	No Data, L	No Data, L	L	L
D	37.3	37.4	75,MhF2,	Trigo-Calleguas families-Haploxeralfs complex, Millsholm rocky loam	No Data, L	No Data, L	L	L
D	37.4	37.6	MhF2,	Millsholm rocky loam	L	L	L	L
D	37.6	37.9	MhE2,MhF2,	Millsholm rocky loam,	L, L	L, L	L	L
D	37.9	38.5	MhE2,	Millsholm rocky loam	L	L	L	L
D	38.5	38.9	MhE2,MhF2,	Millsholm rocky loam,	L, L	L, L	L	L
D	38.9	39.1	MhF2,	Millsholm rocky loam	L	L	L	L
D	39.1	39.2	CmF,MhF2,	Castaic-Balcom silty clay loams, Millsholm rocky loam	L, L	H, L	H	L
D	39.2	40.1	CmF,	Castaic-Balcom silty clay loams	L	H	H	L
D	40.1	40.3	CmE,CmF,	Castaic-Balcom silty clay loams	L, L	H, H	H	L
D	40.3	40.4	CmE,	Castaic-Balcom silty clay loams	L	H	H	L
D	40.4	40.6	CmE,CmF,	Castaic-Balcom silty clay loams	L, L	H, H	H	L
D	40.6	41.4	CmF,	Castaic-Balcom silty clay loams	L	H	H	L
D	41.4	41.7	CmE,CmF,	Castaic-Balcom silty clay loams	L, L	H, H	H	L
D	41.7	41.9	CmF,	Castaic-Balcom silty clay loams	L	H	H	L
D	41.9	42.0	CmF,HcC,	Castaic-Balcom silty clay loams, Hanford sandy loam	L, L	H, L	H	L
D	42.0	42.1	CmF,HcA,HcC,	Castaic-Balcom silty clay loams, Hanford sandy loam	L, L, L	H, L, L	H	L
D	42.1	42.2	CyA,HcA,HcC,	Cortina sandy loam, Hanford sandy loam,	M, L, L	M, L, L	M	L
D	42.2	42.3	CyA,Rg,	Cortina sandy loam, Riverwash	M, No Data	M, No Data	M	L
D	42.3	42.4	CmF,Rg,	Castaic-Balcom silty clay loams, Riverwash	L, No Data	H, No Data	H	L
D	42.4	42.8	CmF,	Castaic-Balcom silty clay loams	L	H	H	L
D	42.8	43.0	CmF,MhE2,	Castaic-Balcom silty clay loams, Millsholm rocky loam	L, L	H, L	H	L
D	43.0	43.1	MhE2,	Millsholm rocky loam	L	L	L	L
D	43.1	43.2	CmF2,MhE2,	Castaic-Balcom silty clay loams, Millsholm rocky loam	L, L	H, L	H	L

TABLE A-11 – IMPACT ASSESSMENT TABLE
Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
D	43.2	43.3	26,CmF2,MhE2,	Stonyford-Millsholm families complex, Castaic-Balcom silty clay loams, Millsholm rocky loam	No Data, L, L	No Data, H, L	H	L
D	43.3	43.8	26,	Stonyford-Millsholm families complex	No Data	No Data	N/A	L
D	43.8	43.9	26,7,	Stonyford-Millsholm families complex, Hanford family	No Data	No Data	N/A	L
D	43.9	44.6	26,	Stonyford-Millsholm families complex	No Data	No Data	N/A	L
D	44.6	44.8	26,7,	Stonyford-Millsholm families complex, Hanford family	No Data	No Data	N/A	L
D	44.8	45.0	12,26,	Mollic Haploxeralfs, Stonyford-Millsholm families complex	No Data	No Data	N/A	L
D	45.0	45.1	12,ScE,	Mollic Haploxeralfs, Saugas loam	No Data, L	No Data, L	L	L
D	45.1	45.3	12,CnG3,ScE,	Mollic Haploxeralfs, Castaica and Saugas soils, Saugas loam	No Data, L, L	No Data, H, L	H	L
D	45.3	45.5	ScE,ScF2,	Saugas loam	L, L	L, L	L	L
D	45.5	45.6	CmF,ScE,ScF2,	Castaic-Balcom silty clay loams, Saugas loam	L, L, L	H, L, L	H	L
D	45.6	45.7	CmF,ScF2,	Castaic-Balcom silty clay loams, Saugas loam	L, L	H, L	H	L
D	45.7	45.8	CmF,CnG3,ScE,ScF2,	Castaic-Balcom silty clay loams, Castaic and Saugus soils, Saugas loam	L, L, L, L	H, H, L, L	H	L
D	45.8	46.0	CnG3,ScF2,	Castaic and Saugus soils, Saugas loam	L, L	H, L	H	L
D	46.0	46.1	ScF2,	Saugas loam	L	L	L	L
D	46.1	46.2	Sa,ScF2,YoC,	Sandy alluvial land, Saugas loam, Yolo loam	L, L, L	H, L, L	H	L
D	46.2	46.3	Sa,YoC,	Sandy alluvial land, Yolo loam	L, L	H, L	H	L
D	46.3	46.4	MfC,Sa,ScE,ScF2,	Metz loamy sand, Sandy alluvial land, Saugas loam,	L, L, L	H, L, L	H	L
D	46.4	46.5	CmF2,HcC,ScE,ScF2,ZaC,	Hanford sandy loam, Saugas loam, Zamora loam	L, L, L, L, L	H, L, L, L, H	H	L
D	46.5	46.6	15,CmF2,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex, Castaic-Balcom silty clay loams	No Data, L	No Data, H	H	L
D	46.6	47.4	15,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data	No Data	N/A	L
D	47.4	47.5	12,15,	Mollic Haploxeralfs, Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data	No Data	N/A	L
D	47.5	47.9	12,	Mollic Haploxeralfs	No Data	No Data	N/A	L
D	47.9	48.1	12,15,	Mollic Haploxeralfs, Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data	No Data	N/A	L
D	48.1	48.2	15,	Calcixerollic Xerochrepts-Calleguas family-Modesto family, moderately deep complex	No Data	No Data	N/A	L
E	0.0	0.3	CaC,	Cajon loamy sand	L	M	M	L
E	0.3	0.9	CaC,HkB,	Cajon loamy sand, Hesperia fine sandy loam	L, L	M, H	H	L
E	0.9	1.0	HkB,Rp,	Hesperia fine sandy loam, Rosamond loam	L, L	H, H	H	L
E	1.0	1.5	Rp,	Rosamond loam	L	H	H	L
E	1.5	1.6	Ro,Rp,	Rosamond fine sandy loam, Rosamond loam	L, L	H, H	H	L
E	1.6	1.8	HkB,Ro,	Hesperia fine sandy loam, Rosamond fine sandy loam	L, L	H, H	H	L
E	1.8	1.9	HkA,HkB,Ro,	Hesperia fine sandy loam, Rosamond fine sandy loam	L, L, L	H, H, H	H	L
E	1.9	2.2	HkA,	Hesperia fine sandy loam	L	H	H	L
E	2.2	2.3	HkA,Rp,	Hesperia fine sandy loam, Rosamond loam	L, L	H, H	H	L
E	2.3	2.4	HgA2,HkA,Ro,Rp,	Hesperia loamy fine sand, Hesperia fine sandy loam, Rosamond fine sandy loam, Rosamond loam	L, L, L, L	H, H, H, H	H	L

TABLE A-11 – IMPACT ASSESSMENT TABLE

Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
E	2.4	2.5	HgA2,Ro,	Hesperia loamy fine sand, Rosamond fine sandy loam	L, L	H, H	H	L
E	2.5	2.6	Ro,	Rosamond fine sandy loam	L	H	H	L
E	2.6	2.8	Rm2,Ro,	Rosamond loamy fine sand, hummocky, Rosamond fine sandy loam	L, L	H, H	H	L
E	2.8	2.9	Rm,Rm2,Ro,	Rosamond loamy fine sand, Rosamond loamy fine sand, hummocky, Rosamond fine sandy loam	L, L, L	H, H, H	H	L
E	2.9	3.1	Rm,Ro,	Rosamond loamy fine sand, Rosamond fine sandy loam	L, L	H, H	H	L
E	3.1	3.3	Ro,	Rosamond fine sandy loam	L	H	H	L
E	3.3	4.0	Rm,Ro,	Rosamond loamy fine sand, Rosamond fine sandy loam	L, L	H, H	H	L
E	4.0	4.3	Ro,	Rosamond fine sandy loam	L	H	H	L
E	4.3	4.5	Ro,Rp,	Rosamond fine sandy loam, Rosamond loam	L, L	H, H	H	L
E	4.5	4.6	Ro,Rp,Rt,	Rosamond fine sandy loam, Rosamond loam, Rosamond silty clay loam	L, L, L	H, H, H	H	L
E	4.6	4.7	Rp,Rt,	Rosamond loam, Rosamond silty clay loam	L, L	H, H	H	L
E	4.7	5.1	Ro,Rt,	Rosamond loam, Rosamond silty clay loam	L, L	H, H	H	L
E	5.1	5.2	Ro,Rp,Rt,	Rosamond fine sandy loam, Rosamond loam, Rosamond silty clay loam	L, L, L	H, H, H	H	L
E	5.2	5.6	Rp,Rt,	Rosamond loam, Rosamond silty clay loam	L, L	H, H	H	L
E	5.6	5.9	Ro,Rp,	Rosamond fine sandy loam, Rosamond loam	L, L	H, H	H	L
E	5.9	6.0	HbC,Ro,	Hanford coarse sandy loam, Rosamond fine sandy loam	L, L	L, H	H	L
E	6.0	6.1	HbC,HkA,Ro,	Hanford coarse sandy loam, Hesperia fine sandy loam, Rosamond fine sandy loam	L, L, L	L, H, H	H	L
E	6.1	6.2	HkA,	Hesperia fine sandy loam	L	H	H	L
E	6.2	6.3	HbA,HkA,	Hanford coarse sandy loam, Hesperia fine sandy loam	L, L	L, H	H	L
E	6.3	6.4	HbA,HcA,HkA,	Hanford coarse sandy loam, Hanford sandy loam, Hesperia fine sandy loam	L, L, L	L, L, H	H	L
E	6.4	6.5	HbA,HcA,Ro,	Hanford coarse sandy loam, Hanford sandy loam, Rosamond fine sandy loam	L, L, L	L, L, H	H	L
E	6.5	6.7	HcA,Ro,	Hanford sandy loam, Rosamond fine sandy loam	L, L	L, H	H	L
E	6.7	6.9	HcA,	Hanford sandy loam	L	L	L	L
E	6.9	7.0	HcA,RcA,	Hanford sandy loam, Ramona coarse sandy loam	L, M	L, M	M	L
E	7.0	7.1	RcA,	Ramona coarse sandy loam	M	M	M	L
E	7.1	7.4	HbA,RcA,	Hanford coarse sandy loam, Ramona coarse sandy loam	L, M	L, M	M	L
E	7.4	7.6	RcA,	Ramona coarse sandy loam	M	M	M	L
E	7.6	7.7	GsA,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	L, M	L, M	M	L
E	7.7	7.8	GsA,GsC2,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	L, L, M	L, L, M	M	L
E	7.8	7.9	GsC2,	Greenfield sandy loam	L	L	L	L
E	7.9	8.0	GsC	Greenfield sandy loam	L	L	L	L
E	8.0	8.1	GsC,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	L, L	L, L	L	L
E	8.1	8.2	GsA,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	L, L	L, L	L	L
E	8.2	8.3	GsA,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	L, M	L, M	M	L
E	8.3	8.4	GsA,	Greenfield sandy loam	L	L	L	L
E	8.4	8.5	GsA,GsC,	Greenfield sandy loam	L, L	L, L	L	L

TABLE A-11 – IMPACT ASSESSMENT TABLE
Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
E	8.5	8.6	GsA,GsC,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	L, L, L	L, L, L	L	L
E	8.6	8.8	GsC,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	L, L	L, L	L	L
E	8.8	9.1	GsC	Greenfield sandy loam	L	L	L	L
E	9.1	9.2	GsC,VsD2,	Greenfield sandy loam, Vista coarse sandy loam	L, L	L, L	L	L
E	9.2	9.3	VsD2,VsE2,	Vista coarse sandy loam	L, L	L, L	L	L
E	9.3	9.5	VsE2,	Vista coarse sandy loam	L	L	L	L
E	9.5	9.6	VsD2,VsE2,	Vista coarse sandy loam	L, L	L, L	L	L
E	9.6	9.7	GsC,VsD2,VsE2,	Greenfield sandy loam, Vista coarse sandy loam	L, L, L	L, L, L	L	L
E	9.7	9.8	GsC,VsD2,	Greenfield sandy loam, Vista coarse sandy loam	L, L	L, L	L	L
E	9.8	10.0	GsC	Greenfield sandy loam	L	L	L	L
E	10.0	10.1	GsA,GsC,	Greenfield sandy loam	L, L	L, L	L	L
E	10.1	10.2	GsA,	Greenfield sandy loam	L	L	L	L
E	10.2	10.3	GsA,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	L, L	L, L	L	L
E	10.3	10.4	HbA,RcB,	Hanford coarse sandy loam, Ramona coarse sandy loam	L, M	L, M	M	L
E	10.4	10.5	GsA,HbA,RcB,	Greenfield sandy loam, Hanford coarse sandy loam, Ramona coarse sandy loam	L, L, M	L, L, M	M	L
E	10.5	10.6	GsA,	Greenfield sandy loam	L	L	L	L
E	10.6	10.7	GsA,GsC,	Greenfield sandy loam	L, L	L, L	L	L
E	10.7	10.9	GsC	Greenfield sandy loam	L	L	L	L
E	10.9	11.1	GsC2,	Greenfield sandy loam	L	L	L	L
E	11.1	11.3	GsC	Greenfield sandy loam	L	L	L	L
F1	0.0	0.2	GsC	Greenfield sandy loam	L	L	L	L
F2	0.2	0.3	GsC,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	L, L	L, L	L	L
F2	0.3	0.4	GsA,HbA,RcA,	Greenfield sandy loam, Hanford coarse sandy loam, Ramona coarse sandy loam	L, L, M	L, L, M	M	L
F2	0.4	0.5	RcA,	Ramona coarse sandy loam	M	M	M	L
F2	0.5	0.6	HcA,RcA,	Hanford sandy loam, Ramona coarse sandy loam	L, M	L, M	M	L
F2	0.6	0.7	GsC2,HcA,RcA,	Greenfield sandy loam, Hanford sandy loam, Ramona coarse sandy loam	L, L, M	L, L, M	M	L
F2	0.7	0.8	GsC2,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	L, M	L, M	M	L
F2	0.8	1.1	GsC	Greenfield sandy loam	L	L	L	L
F2	1.1	1.3	GsA,GsC,	Greenfield sandy loam	L, L	L, L	L	L
F2	1.3	1.7	GsA,	Greenfield sandy loam	L	L	L	L
F2	1.7	2.1	GsA,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	L, M	L, M	M	L
F2	2.1	2.3	RcA,	Ramona coarse sandy loam	M	M	M	L
F2	2.3	2.5	GsC,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	L, M	L, M	M	L
F2	2.5	2.8	GsC	Greenfield sandy loam	L	L	L	L
115	0.0	0.2	GsC	Greenfield sandy loam	L	L	L	L
115	0.2	0.3	GsC,GsD2,HbA,	Greenfield sandy loam, Hanford coarse sandy loam	L, L, L	L, L, L	L	L
115	0.3	0.4	HbA,RcA,	Hanford sandy loam, Ramona coarse sandy loam	L, M	L, M	M	L
115	0.4	0.7	RcA,	Ramona coarse sandy loam	M	M	M	L
115	0.7	0.8	GsC2,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	L, M	L, M	M	L

TABLE A-11 – IMPACT ASSESSMENT TABLE

Geologic Feature: Corrosive Soils

Location			Feature				Impact	
Segment Corridor	Mile From	Mile To	Soil MUSYM	Description	Corrosive Soil Potential (Concrete)	Corrosive Soil Potential (Steel)	Initial	Residual
115	0.8	0.9	GsC2,	Greenfield sandy loam	L	L	L	L
115	0.9	1.0	GsA,GsC,	Greenfield sandy loam	L, L	L, L	L	L
115	1.0	1.1	GsA,	Greenfield sandy loam	L	L	L	L
115	1.1	1.5	GsA,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	L, M	L, M	M	L
115	1.5	1.6	GsA,RcA,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	L, M, M	L, M, M	M	L
115	1.6	1.7	GsA,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	L, M	L, M	M	L
115	1.7	1.8	GsA,GsC,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	L, L, M	L, M, M	M	L
115	1.8	1.9	GsA,GsC,RcA,	Greenfield sandy loam, Ramona coarse sandy loam	L, M, M	L, M, M	M	L
115	1.9	2.0	GsC,RcA,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	L, M, M	L, M, M	M	L
115	2.0	2.1	GsC,RcB,	Greenfield sandy loam, Ramona coarse sandy loam	L, M	L, M	M	L
115	2.1	2.6	GsC	Greenfield sandy loam	L	L	L	L
115	2.6	2.7	GsC,RcC,	Greenfield sandy loam, Ramona coarse sandy loam	L, M	L, M	M	L
115	2.7	2.9	RcC,	Ramona coarse sandy loam	M	M	M	L
115	2.9	3.0	RcC,TsF,	Ramona coarse sandy loam, Terrace escarpments	M, No Data	M, No Data	M	L
115	3.0	3.1	HbC,RcC,TsF,	Hanford coarse sandy loam, Ramona coarse sandy loam, Terrace escarpments	L, M, No Data	L, M, No Data	M	L
115	3.1	3.2	HbC,RcC,RcD,TsF,	Hanford coarse sandy loam, Ramona coarse sandy loam, Terrace escarpments	L, M, M, No Data	L, M, M, No Data	M	L
115	3.2	3.3	HbC,RcD,TsF,	Hanford coarse sandy loam, Ramona coarse sandy loam, Terrace escarpments	L, M, No Data	L, M, No Data	M	L
115	3.3	3.5	HbC,TsF,	Hanford coarse sandy loam, Terrace escarpments	L, No Data	L, No Data	L	L
115	3.5	3.6	TsF,	Terrace escarpments	No Data	No Data	N/A	L
115	3.6	3.7	TsF,VsE2,	Terrace escarpments, Vista coarse sandy loam	No Data, L	No Data, L	L	L
115	3.7	3.8	RcC,RcD,TsF,VsE2,	Ramona coarse sandy loam, Terrace escarpments, Vista coarse sandy loam	M, M, No Data, L	M, M, No Data, L	M	L
115	3.8	3.9	RcB,RcC,RcD,TsF,VsF2,	Ramona coarse sandy loam, Terrace escarpments, Vista coarse sandy loam	M, M, M, No Data, L	M, M, M, No Data, L	M	L
115	3.9	4.0	RcB,RcD,TsF,VsF2,	Ramona coarse sandy loam, Terrace escarpments, Vista coarse sandy loam	M, M, No Data, L	M, M, No Data, L	M	L
115	4.0	4.1	RcB,RcC,TsF,VsF2,	Ramona coarse sandy loam, Terrace escarpments, Vista coarse sandy loam	M, M, No Data, L	M, M, No Data, L	M	L
115	4.1	4.2	HbC,RcC,TsF,VsF2,	Hanford coarse sandy loam, Ramona coarse sandy loam, Terrace escarpments, Vista coarse sandy loam	L, M, No Data, L	L, M, No Data, L	M	L
115	4.2	4.3	HbC,VsF,VsF2,	Hanford coarse sandy loam, Vista coarse sandy loam	L, L, L	L, L, L	L	L
115	4.3	4.4	HbC,VsF,	Hanford coarse sandy loam, Vista coarse sandy loam	L, L	L, L	L	L
115	4.5	4.6	HbC,VsF,VsF2,	Hanford coarse sandy loam, Vista coarse sandy loam	L, L, L	L, L, L	L	L
115	4.6	4.7	HbC,VsE,	Hanford coarse sandy loam, Vista coarse sandy loam	L, L	L, L	L	L
115	4.7	4.8	AmF2,HbC,HdC, VsE,	Amargosa rocky coarse sandy loam, Hanford coarse sandy loam, Vista coarse sandy loam	L, L, L, L	M, L, L, L	M	L
G	0.0	1.0	GsC	Greenfield sandy loam	L	L	L	L

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
I	6.5	6.6	20-30	25.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	6.6	6.7	>30	32.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	6.7	6.8	20-30	13.6	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	6.8	6.9	20-30	17.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	6.9	7.0	20-30	12.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Not Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	7.0	7.1	10-20	8.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	7.1	7.2	20-30	14.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	7.2	7.3	>30	19.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	7.3	7.4	20-30	17.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	7.4	7.5	20-30	12.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	7.5	7.6	20-30	15.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	7.6	7.7	10-20	4.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	7.7	7.8	10-20	1.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	7.8	7.9	10-20	3.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	7.9	8.0	0-10	10.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Amargosa Creek	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8, HYD-10, HYD-11	NI
I	8.0	8.1	0-10	7.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	Amargosa Creek, Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8, HYD-10, HYD-11	NI
I	8.1	8.2	10-20	4.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	Yes	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8, HYD-10, HYD-11	NI
I	8.2	8.3	20-30	22.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	8.3	8.4	20-30	15.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	8.4	8.5	20-30	13.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	8.5	8.6	10-20	10.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	8.6	8.7	10-20	3.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	8.7	8.8	10-20	10.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	8.8	8.9	20-30	20.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	San Andreas Rift Zone SEA	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
I	8.9	9.0	10-20	6.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	9.0	9.1	10-20	4.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	9.1	9.2	10-20	7.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	9.2	9.3	10-20	11.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	9.3	9.4	10-20	6.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	9.4	9.5	10-20	11.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	9.5	9.6	10-20	11.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	9.6	9.7	10-20	11.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	9.7	9.8	10-20	11.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	9.8	9.9	10-20	10.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	9.9	10.0	10-20	4.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	10.0	10.1	0-10	4.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	10.1	10.2	0-10	3.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Anaverde Creek	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	10.2	10.3	0-10	5.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	10.3	10.4	0-10	5.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	10.4	10.5	10-20	15.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	10.5	10.6	10-20	9.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	10.6	10.7	10-20	20.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	10.7	10.8	20-30	10.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	10.8	10.9	20-30	30.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	10.9	11.0	20-30	15.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	11.0	11.1	20-30	37.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	11.1	11.2	20-30	21.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	11.2	11.3	20-30	32.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	11.3	11.4	20-30	13.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	11.4	11.5	20-30	37.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	11.5	11.6	20-30	16.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	11.6	11.7	10-20	8.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	11.7	11.8	10-20	7.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	11.8	11.9	20-30	20.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	11.9	12.0	20-30	5.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	12.0	12.1	20-30	6.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	12.1	12.2	20-30	22.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perrenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
I	12.2	12.3	20-30	37.6	None	5	Steel Lattice	0.724	0.724	0.85	1.24	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	H	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	M
I	12.3	12.4	20-30	18.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	12.4	12.5	20-30	24.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	12.5	12.6	20-30	25.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	12.6	12.7	20-30	20.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Anaverde Creek	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	12.7	12.8	10-20	24.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	12.8	12.9	10-20	23.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	12.9	13.0	20-30	16.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	13.0	13.1	20-30	15.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	13.1	13.2	20-30	25.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	13.2	13.3	>30	22.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Anaverde Creek	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	13.3	13.4	>30	26.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	13.4	13.5	20-30	13.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	13.5	13.6	>30	33.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	13.6	13.7	>30	13.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206 - Antelope-Fremont Valleys	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	13.7	13.8	20-30	12.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18090206-Ant.-Fremont Vlys;18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	13.8	13.9	20-30	30.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	13.9	14.0	20-30	18.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	14.0	14.1	20-30	21.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	14.1	14.2	20-30	34.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	14.2	14.3	>30	10.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	14.3	14.4	20-30	26.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	14.4	14.5	>30	36.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	14.5	14.6	>30	36.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	14.6	14.7	20-30	44.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	14.7	14.8	20-30	34.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	14.8	14.9	10-20	4.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	14.9	15.0	10-20	1.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI		NI
I	15.0	15.1	20-30	21.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	15.1	15.2	20-30	16.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	15.2	15.3	20-30	12.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	15.3	15.4	20-30	12.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	15.4	15.5	20-30	29.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	15.5	15.6	20-30	10.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	15.6	15.7	20-30	21.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	15.7	15.8	10-20	19.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	15.8	15.9	10-20	7.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	15.9	16.0	10-20	4.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	16.0	16.1	20-30	18.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	16.1	16.2	10-20	9.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	16.2	16.3	20-30	25.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	16.3	16.4	20-30	28.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	16.4	16.5	20-30	16.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	16.5	16.6	20-30	13.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	No	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	16.6	16.7	20-30	9.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Partially Hydric	No	NI	N/A	NI
I	16.7	16.8	20-30	37.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
I	16.8	16.9	>30	29.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
I	16.9	17.0	>30	6.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
I	17.0	17.1	20-30	29.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
I	17.1	17.2	20-30	29.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
I	17.2	17.3	20-30	28.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
I	17.3	17.4	20-30	19.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
I	17.4	17.5	20-30	34.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
I	17.5	17.6	20-30	21.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Unknown	No	NI	N/A	NI
I	17.6	17.7	20-30	17.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Unknown	No	NI	N/A	NI
I	17.7	17.8	20-30	9.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
I	17.8	17.9	10-20	12.9	None	4	Steel Lattice	0.724	0.724	0.56	0.85	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
I	17.9	18.0	10-20	5.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
I	18.0	18.1	20-30	12.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
I	18.1	18.2	10-20	5.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Not Hydric	No	NI	N/A	NI
I	18.2	18.3	10-20	18.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Not Hydric	No	NI	N/A	NI
I	18.3	18.4	10-20	12.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	18.4	18.5	10-20	18.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	18.5	18.6	20-30	11.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	18.6	18.7	10-20	12.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	18.7	18.8	10-20	11.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	18.8	18.9	20-30	5.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	18.9	19.0	20-30	11.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	19.0	19.1	10-20	11.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	19.1	19.2	10-20	6.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	19.2	19.3	20-30	10.0	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	19.3	19.4	20-30	12.9	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	19.4	19.5	>30	23.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	19.5	19.6	20-30	27.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	19.6	19.7	20-30	33.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	19.7	19.8	20-30	30.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	19.8	19.9	>30	27.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	19.9	20.0	20-30	14.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	20.0	20.1	20-30	29.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perrenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
I	20.1	20.2	>30	34.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	20.2	20.3	>30	25.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	20.3	20.4	>30	21.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	20.4	20.5	>30	19.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	20.5	20.6	>30	32.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	20.6	20.7	>30	30.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	20.7	20.8	20-30	26.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	20.8	20.9	>30	30.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	20.9	21.0	>30	15.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	21.0	21.1	20-30	13.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	21.1	21.2	>30	18.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	21.2	21.3	>30	33.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	21.3	21.4	20-30	21.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	21.4	21.5	20-30	27.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	21.5	21.6	20-30	43.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	21.6	21.7	20-30	22.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	21.7	21.8	20-30	20.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	21.8	21.9	20-30	14.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	21.9	22.0	20-30	19.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	22.0	22.1	10-20	11.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	22.1	22.2	20-30	14.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	22.2	22.3	>30	31.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	22.3	22.4	20-30	21.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	22.4	22.5	20-30	13.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	22.5	22.6	20-30	16.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	22.6	22.7	>30	19.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	22.7	22.8	>30	22.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	22.8	22.9	20-30	21.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	22.9	23.0	>30	49.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	23.0	23.1	>30	25.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
I	23.1	23.2	>30	8.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	Unnamed	None	None	No	None	None	None	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
I	23.2	23.3	>30	25.2	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Partially Hydric	Yes	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8, HYD-10, HYD-11	NI
I	23.3	23.4	>30	17.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	Yes	None	None	None	Unknown	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	23.4	23.5	>30	26.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
I	23.5	23.6	20-30	30.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
I	23.6	23.7	>30	17.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
I	23.7	23.8	20-30	33.5	None	5	Steel Lattice	0.724	0.724	0.85	1.24	18070102-Santa Clara	None	None	None	None	No	None	None	None	Unknown	No	NI	N/A	NI
I	23.8	23.9	20-30	10.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Not Hydric	No	NI	N/A	NI
I	23.9	24.0	20-30	12.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Not Hydric	No	NI	N/A	NI
I	24.0	24.1	20-30	37.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Not Hydric	No	NI	N/A	NI
I	24.1	24.2	20-30	38.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Not Hydric	No	NI	N/A	NI
I	24.2	24.3	>30	39.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	No	None	None	None	Not Hydric	No	NI	N/A	NI
I	24.3	24.4	>30	31.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Partially Hydric	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
I	24.4	24.5	20-30	18.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	Yes	None	None	None	Partially Hydric	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	L
I	24.5	24.6	20-30	17.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	No	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	L
I	24.6	24.7	>30	21.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	24.7	24.8	20-30	34.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	24.8	24.9	20-30	37.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	24.9	25.0	20-30	36.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	25.0	25.1	20-30	30.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	25.1	25.2	20-30	16.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	25.2	25.3	20-30	33.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	25.3	25.4	>30	25.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	25.4	25.5	>30	20.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	SRS	None	None	Partially Hydric	No	M	N/A	L
I	25.5	25.6	10-20	18.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	SRS	None	None	Partially Hydric	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	L
I	25.6	25.7	20-30	7.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (2)	None	None	NA	SRS	None	None	Partially Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
I	25.7	25.8	20-30	4.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	SRS	None	None	Partially Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
I	25.8	25.9	20-30	3.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Vasquez Canyon	None	None	NA	SRS	None	None	Partially Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
I	25.9	26.0	20-30	3.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Vasquez Canyon	None	None	NA	SRS	None	None	Partially Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
I	26.0	26.1	20-30	2.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Vasquez Canyon	None	None	NA	SRS	None	None	Partially Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perrenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
I	26.1	26.2	20-30	3.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Vasquez Canyon	None	None	NA	SRS	None	None	Partially Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
I	26.2	26.3	10-20	6.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Vasquez Canyon	None	None	NA	SRS	None	None	Partially Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
I	26.3	26.4	20-30	37.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	SRS	None	None	Partially Hydric	No	M	N/A	L
I	26.4	26.5	>30	44.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	26.5	26.6	20-30	19.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	26.6	26.7	20-30	33.7	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	26.7	26.8	10-20	16.4	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	26.8	26.9	10-20	6.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	26.9	27.0	10-20	9.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	27.0	27.1	20-30	11.6	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	Cruzan Mesa Vernal Pools SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	27.1	27.2	>30	6.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	Cruzan Mesa Vernal Pools SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	27.2	27.3	20-30	13.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	Cruzan Mesa Vernal Pools SEA	None	Partially Hydric	No	NI	HYD-3, HYD-4, HYD-5, HYD-7, HYD-8	NI
I	27.3	27.4	10-20	11.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	Cruzan Mesa Vernal Pools SEA	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, HYD-8	NI
I	27.4	27.5	0-10	2.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (2)	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	27.5	27.6	0-10	4.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	27.6	27.7	0-10	4.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	27.7	27.8	0-10	2.5	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	27.8	27.9	0-10	4.4	None - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	27.9	28.0	0-10	3.1	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	28.0	28.1	0-10	2.1	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	28.1	28.2	0-10	4.9	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	28.2	28.3	0-10	1.8	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	28.3	28.4	0-10	2.9	Improve - AG	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	NA	SRS	None	None	Partially Hydric	Yes	NI	HYD-10, HYD-11	NI
I	28.4	28.5	0-10	3.8	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	Unnamed	None	None	NA	SRS	None	None	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
I	28.5	28.6	20-30	13.3	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	Unnamed	None	None	NA	SRS	None	None	Partially Hydric	Yes	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	NI
I	28.6	28.7	20-30	9.5	Use	1	Steel Lattice	0.584	0.584	0.08	0.08	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	28.7	28.8	20-30	30.5	None	5	Steel Lattice	0.724	0.724	0.85	1.24	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	H	N/A	M
I	28.8	28.9	20-30	22.1	None	5	Steel Lattice	0.724	0.724	0.85	1.24	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	H	N/A	M
I	28.9	29.0	20-30	23.8	None	5	Steel Lattice	0.724	0.724	0.85	1.24	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	H	N/A	M
I	29.0	29.1	10-20	8.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI	N/A	NI
I	29.1	29.2	20-30	6.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Partially Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	29.2	29.3	20-30	10.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Partially Hydric	No	NI		NI
I	29.3	29.4	10-20	13.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	SRS	None	None	Partially Hydric	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	L
I	29.4	29.5	>30	22.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	SRS	None	None	Not Hydric	No	M	N/A	L
I	29.5	29.6	>30	24.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	29.6	29.7	>30	78.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	29.7	29.8	>30	39.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	29.8	29.9	>30	47.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	29.9	30.0	>30	34.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	30.0	30.1	>30	26.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	30.1	30.2	>30	31.5	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	30.2	30.3	>30	51.9	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	30.3	30.4	>30	30.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	30.4	30.5	>30	21.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	None	None	None	Not Hydric	No	NI	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	NI
I	30.5	30.6	20-30	36.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	SRS	None	None	Not Hydric	No	M	N/A	L
I	30.6	30.7	20-30	26.2	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	None	None	None	Not Hydric	No	NI	N/A	NI
I	30.7	30.8	>30	27.7	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	SRS	None	None	Not Hydric	No	M	N/A	L
I	30.8	30.9	20-30	7.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	SRS	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
I	30.9	31.0	10-20	2.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (2)	None	None	NA	SRS	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
I	31.0	31.1	10-20	1.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (2)	None	None	NA	SRS	None	None	Partially Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
I	31.1	31.2	10-20	1.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	SRS	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
I	31.2	31.3	20-30	2.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (2)	None	None	NA	SRS, SSARW	None	None	Not Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
I	31.3	31.4	20-30	3.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed (2)	None	None	NA	SRS, SSARW	None	None	Partially Hydric	Yes	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-10, HYD-11	L
I	31.4	31.5	20-30	5.1	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	SSARW	None	None	Partially Hydric	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	L
I	31.5	31.6	20-30	25.4	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	Unnamed	None	None	NA	SSARW	None	None	Partially Hydric	No	M	HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6	L

Corridor	Mile From	Mile To	Ground Slope (%)	Line Slope	Access	Ground Disturbance	Proposed Structure	Minimum Temporary Disturbance	Maximum Temporary Disturbance	Minimum Permanent Disturbance	Maximum Permanent Disturbance	Hydrologic Unit	Perrenial Streams	Intermittent Stream	Aqueduct	Well	Riparian Conservation Area (RCA)	Riparian Community	Significant Ecological Area (SEA)	NWI Wetland	Hydric Soil	FEMA Floodplain	Water Initial Impact	Mitigation Measure	Water Residual Impact
I	31.6	31.7	20-30	12.0	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	SSARW	None	None	Unknown	No	M	N/A	L
I	31.7	31.8	10-20	11.8	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	SSARW	None	None	Unknown	No	M	N/A	L
I	31.8	31.9	20-30	9.3	Improve	2	Steel Lattice	0.584	0.584	0.18	0.23	18070102-Santa Clara	None	None	None	None	NA	SSARW	None	None	Unknown	No	M	N/A	L

APPENDIX B
RUSLE ANALYSIS REPORT

March 2010

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

RUSLE Analysis Report

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118353

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Barren Ridge Renewable Transmission Project

RUSLE Analysis Report

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TABLE OF CONTENTS

1.0 INTRODUCTION 1
2.0 METHODOLOGY 1
3.0 RESULTS AND DISCUSSION 4
4.0 REFERENCES 9

TABLES

Table 1. NLCD Codes and Vegetation Classes Adjusted by Burn Year 2
Table 2. C-factor Values 3
Table 3. RUSLE Erosion Results for Alternative 1 6
Table 4. RUSLE Erosion Results for Alternative 2 6
Table 5. RUSLE Erosion Results for Alternative 3 6

FIGURES

Figure 1. Baseline RUSLE Erosion Model Results and Associated Hydrologic Units 5

1.0 INTRODUCTION

The City of Los Angeles Department of Water and Power (LADWP) is proposing the Barren Ridge Renewable Transmission Project (BRRTP or Project) to access clean, renewable resources in the Tehachapi Mountain and Mojave Desert areas. The Project is approximately 76 miles in length, beginning at the Barren Ridge Switching Station to Rinaldi Substation, and extends approximately 12 miles from the Castaic Power Plant to the proposed Haskell Switching Station. The proposed BRRTP includes the following:

1) Construction of approximately 61 miles of a 230 kilovolt (kV) double-circuit transmission line from the LADWP Barren Ridge Switching Station to Haskell Canyon;
2) Addition of approximately 12 miles of a 230 kV circuit on the existing double-circuit structures from Haskell Canyon to the Castaic Power Plant;
3) Upgrade of approximately 76 miles of the existing Barren Ridge-Rinaldi (BR-RIN) 230 kV transmission line with larger capacity conductors between the Barren Ridge Switching Station and the Rinaldi Substation;
4) Construction of a new electrical switching station in Haskell Canyon;
5) Expansion of the existing Barren Ridge Switching Station.

Portions of each of the three Project alternative routes would cross through the Angeles National Forest. Temporary impacts would occur where ground is disturbed for equipment staging and line work, and where construction access would be needed. Permanent impacts would result from ground disturbance required for upgrading the existing access roads and spur roads, and clearing the right-of-way.

Initial analysis of Project-related impacts revealed the potential for impacts to water quality through erosion of disturbed soils, leading to increased sedimentation and turbidity of receiving waters within the Angeles National Forest. At the request of the U.S. Forest Service (USFS), POWER Engineers, Inc. has prepared a watershed analysis to predict erosion rates (tons/acre/year) that would potentially result from construction of the alternative transmission line routes in the Angeles National Forest. This analysis allows for the comparison of potential impacts on sensitive aquatic habitat and species, and beneficial uses of waters from construction of the alternative routes within the Angeles National Forest.

2.0 METHODOLOGY

Following consultation with Mr. Paul Gregory, Hydrologist for the Angeles National Forest, the Revised Universal Soil Loss Equation, Version 2 (RUSLE) was selected to predict annual erosion from Project-related ground disturbance. The RUSLE model was run using ESRI ArcGIS 9.3.1 software. The RUSLE model predicts long-term average annual soil loss expressed in tons per acre per year (A), and is determined by the product of five factors:

$$A = R \cdot K \cdot LS \cdot C \cdot P$$

where:

A = Estimated soil loss in tons per acre per year
R = Rainfall-erosivity factor
K = Soil erodibility factor
LS = Slope length and slope steepness factor
C = Land cover management factor
P = Erosion control practice factor

The R factor represents the erosivity due to rainfall at a particular location. An average annual value of R is determined from historical weather records using erosivity values determined from individual storms, computed as the average annual sum of EI_{30}, where E is total storm kinetic energy and I_{30} is the maximum 30-minute storm intensity. The R factor accounts for both the intensity and amount of rainfall. This analysis used 4-kilometer resolution data acquired from the Natural Resource Conservation Service (NRCS) National Water and Climate Center in Portland, Oregon. This data was then converted to a 10-meter grid for calculation purposes.

The K factor represents the susceptibility of a soil to sheet and rill erosion by water. The estimates are based primarily on percentage of silt, sand, and organic matter, and on soil structure and saturated hydraulic conductivity (Ksat). For example, silt soils generally have the highest K values because silt soil particles detach easily and the sediment is easily transported. Soils with high clay content have the lowest K values because clay soils are generally plastic and resistant to detachment. K factor values from Kern, Los Angeles, and Ventura county soils were assigned based on dominant component Soil Survey Geographic (SSURGO) data from the NRCS database. Within the study area, values of K range from 0.02 to 0.32. This data was then converted to a 10-meter grid for calculation purposes.

The LS factors represent the effects of topography on erosion. The L factor represents hillslope length and the S factor represents hillslope gradient. In general, soil loss increases with increased hillslope length and gradient. To calculate the LS factor, 10-meter digital elevation model data was obtained from USGS. An automated program, RUSLE_LS_4_PC (Van Remortel *et. al.* 2007) was used to account for changes in slope from cell to cell by using a slope cut-off factor for ending/beginning slope length cumulation. For this analysis, the default cutoff values were used; a cutoff factor of 0.7 feet was used for slopes of less than five percent, and a cutoff factor of 0.5 feet was used for slopes greater than or equal to five percent.

The C factor represents the effects of land cover; specifically, the effects of vegetative cover, soil cover, soil biomass (roots and incorporated residue), and soil-disturbing activities on erosion. The C value is the average soil loss ratio weighted by the distribution of rainfall (EI) during the year. This study used a National Land Cover Dataset (NLCD) adjusted with wildfire perimeter data. The NLCD data was adjusted for both the base level RUSLE model and the proposed Project RUSLE model, to account for fires within the last 10 years. Fire data was incorporated based on the year of the burn and changing cover classes within burn areas based on the number of years since the burn occurred (see Table 1).

TABLE 1. NLCD CODES AND VEGETATION CLASSES ADJUSTED BY BURN YEAR

Burn Year	Adjusted NLCD Code and Vegetation Cover Class
2009	31 – Barren Land (Rock/Sand/Clay)
2008	31 – Barren Land (Rock/Sand/Clay)
2007	71 – Grassland/Herbaceous
2006	71 – Grassland/Herbaceous
2005	71 – Grassland/Herbaceous
2004	71 – Grassland/Herbaceous
2003	71 – Grassland/Herbaceous
2002	52 – Scrub/Shrub
2001	52 – Scrub/Shrub
2000	52 – Scrub/Shrub
1999	52 – Scrub/Shrub

Areas where fires occurred recently (2008 and 2009) were given a vegetation cover class of “barren land” since the fires had consumed all vegetation covers and soils were exposed. Over time, these areas begin to recover, with establishment of grasses and herbaceous vegetation, followed by scrub/shrub or woody vegetation providing increased soil cover and stability.

Data for areas within the Angeles National Forest indicates that annual erosion rates during the first year after a burn are 30 times greater than baseline levels. The second year after a burn, erosion rates decrease to 10 times baseline followed by seven times greater the third year, five times greater the fourth year, four times greater the fifth year, three times greater the sixth year, and two times greater the seventh year. By eight to ten years following the burn, the area has typically recovered to baseline levels (Rowe *et. al.* 1949).

For analysis of erosion resulting from the Project, C values were adjusted based on Project-related changes (*e.g.*, road construction or improvement of existing roads). The NLCD was modified for each proposed alternative where roads would require improvement. Roads requiring improvement were buffered by five meters, and underlying values (one 10-meter grid cell) were designated "barren land." Based on RUSLE2 software, RUSLE calculation procedure manuals, correlation tables, and approximate ranges from previous analyses, NLCD codes were correlated and converted to C values, as shown in Table 2. The adjusted C values were then converted to a 10-meter grid.

TABLE 2. C-FACTOR VALUES

C Factor	NLCD Code Number	Description
0	11	Open Water
0.01	21	Developed Open Space
0.01	22	Developed, Low Intensity
0.02	23	Developed, Medium Intensity
0.03	24	Developed, High Intensity
0.3	31	Barren Land
0.003	41	Deciduous Forest
0.003	42	Evergreen Forest
0.003	43	Mixed Forest
0.06	52	Scrub/Shrub
0.05	71	Grassland/Herbaceous
0.02	81	Pasture/Hay
0.09	82	Cultivated Crops
0.0003	90	Woody Wetlands
0.0006	95	Emergent Herbaceous Wetlands

The P factor represents the influence of control practices, such as contour farming, terracing, diversions, or sediment- and erosion-control best management practices (BMPs) that reduce the erosion potential of stormwater runoff. Although the P factor can be modified to account for construction disturbance and associated effectiveness of mitigation features, this variable was held constant throughout this analysis. Assignment of P values for specific disturbance and BMPs is impractical for an analysis of this scale. For an analysis of this scale, using a constant value of P is considered a conservative approach if the total area modified with increased land use factors (C factor) due to construction is overestimated. This is the case with this analysis, since C factor values were assigned in 10-meter grid increments.

Given the scale of the study area, specific data regarding implementation of erosion- and sediment-control BMPs were not included in this analysis ($P = 1$), and predicted post-construction erosion values do not reflect effects of BMP implementation. In actuality, erosion- and sediment-control BMPs and mitigation measures would be implemented throughout the Project and would reduce the potential for erosion and sedimentation.

The boundary of the watershed study area was delineated using twelve-digit/6th level hydrologic units encompassing the alternative routes within the Angeles National Forest. All data was clipped to this study area before running the RUSLE analyses.

3.0 RESULTS AND DISCUSSION

The study area encompasses 333,135 acres of highly varied terrain within the Angeles National Forest. The study area was divided according to watersheds affected by routing alternatives of the Project. The watersheds evaluated in this assessment are 6th level subwatersheds (12-digit hydrologic unit codes [HUCs]) ranging from approximately 11,409 acres to 38,533 acres and elevations of approximately 960 feet to 3,550 feet. Using the RUSLE model, baseline annual erosion rates (tons/acre/year) were estimated for each subwatershed affected by the alternative routes (Alternatives 1, 2, and 3) as shown in Figure 1. Four subwatersheds within the study area would not be affected by the BRRTP alternatives: Elizabeth Lake Canyon (180701020304), Fish Creek-Piru Creek (180701020602), Fish Canyon (180701020302), and Upper Bouquet Canyon (180701020201).

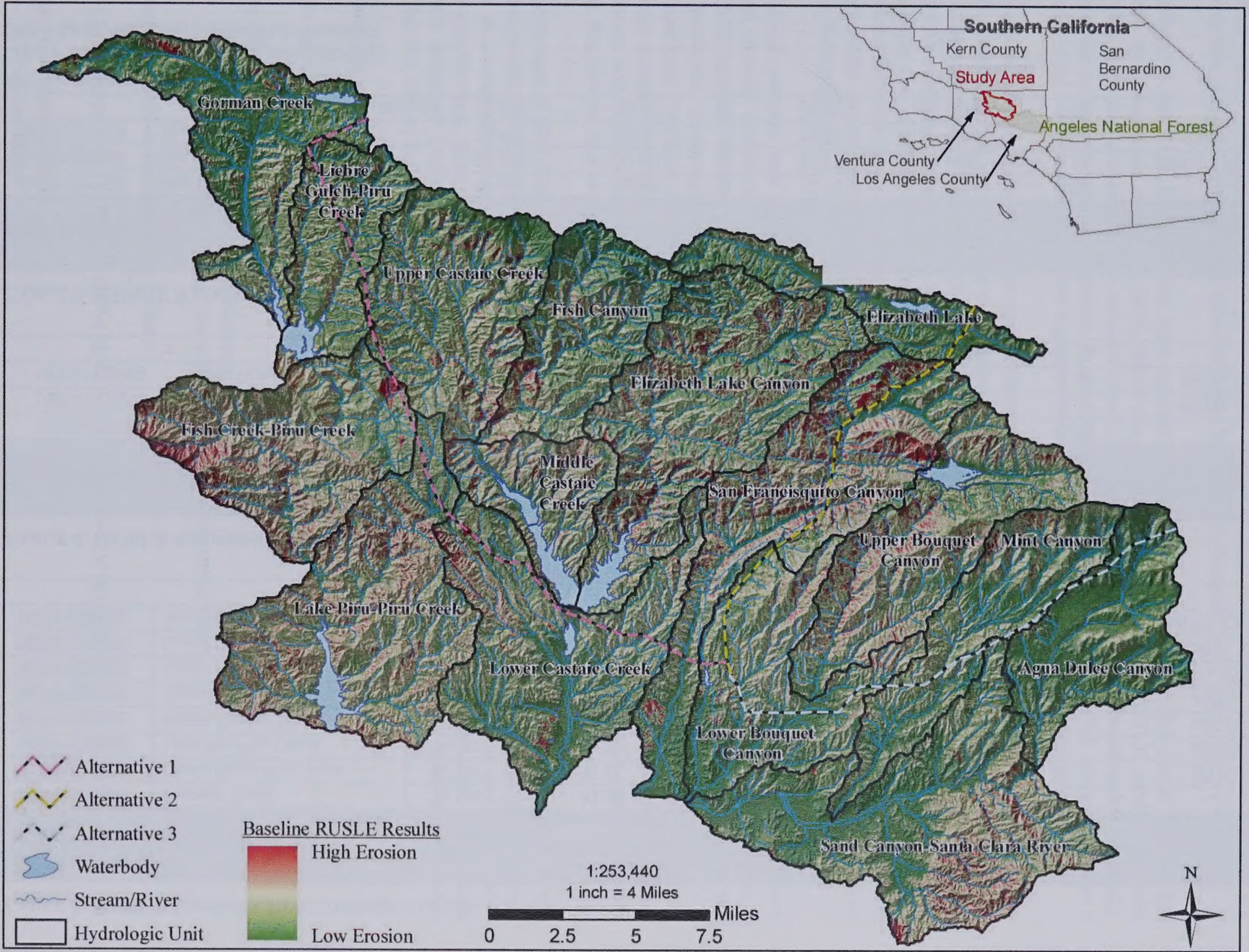
Once baseline values were estimated, the change in annual erosion rates (tons/acre/year) was estimated for each subwatershed as a result of construction of the alternative routes (*e.g.*, vegetation clearing related to road construction). Using these results, the increase of erosion from baseline conditions was calculated.

Alternative 1 would affect eight subwatersheds with a combined area of 191,957 acres. Sensitive aquatic species within these subwatersheds are arroyo toad (*Anaxyrus californicus*), California red-legged frog (*Rana draytonii*), and the Santa Ana sucker (*Catostomus santaanae*). As detailed in Table 3, estimated average baseline annual erosion level for these subwatersheds is 48.15 tons/acre/year. With construction of Alternative 1, predicted average erosion levels would be 48.43 tons/acre/year, and increase of 0.68 percent over baseline conditions. Of the eight subwatersheds, Liebre Gulch-Piru Creek would have the largest potential increase (2.26 percent) over baseline conditions from construction of Alternative 1.

Alternative 2 would affect three subwatersheds with a combined area of 65,172 acres. Sensitive aquatic species within these subwatersheds are the arroyo toad and the California red-legged frog. As detailed in Table 4, estimated average baseline annual erosion level for these subwatersheds is 43.93 tons/acre/year. With construction of Alternative 2, predicted average annual erosion would be approximately 44.43 tons/acre/year, an increase of 1.18 percent over baseline. Of the three subwatersheds, Elizabeth Lake would have the largest potential increase (1.59 percent) over baseline conditions from construction of Alternative 2.

Alternative 3 would affect three subwatersheds with a combined area of 76,006 acres. Sensitive aquatic species within these subwatersheds are the arroyo toad, California red-legged frog, and the Santa Ana sucker. Estimated average baseline annual erosion level for these subwatersheds is 35.42 tons/acre/year. As detailed in Table 5, with construction of Alternative 3, predicted average annual erosion would be 35.82 tons/acre/year, an increase of 1.35 percent over baseline. Of the three subwatersheds, Agua Dulce Canyon would have the largest potential increase (2.04 percent) over baseline conditions from construction of Alternative 3.

FIGURE 1. BASELINE RUSLE EROSION MODEL RESULTS AND ASSOCIATED HYDROLOGIC UNITS


Southern California
Kern County
San Bernardino County
Study Area
Angeles National Forest
Ventura County
Los Angeles County
Gorman Creek
Liebre Gulch-Piru Creek
Upper Castaic Creek
Fish Canyon
Elizabeth Lake
Elizabeth Lake Canyon
Fish Creek-Piru Creek
Middle Castaic Creek
San Francisquito Canyon
Upper Bouquet Canyon
Mint Canyon
Lake Piru-Piru Creek
Lower Castaic Creek
Agua Dulce Canyon
Lower Bouquet Canyon
Sand Canyon-Santa Clara River
Alternative 1
Alternative 2
Alternative 3
Waterbody
Stream/River
Hydrologic Unit
Baseline RUSLE Results
High Erosion
Low Erosion
1:253,440
1 inch = 4 Miles
Miles
0
2.5
5
7.5
N

Print Date: February 26, 2010

TABLE 3. RUSLE EROSION RESULTS FOR ALTERNATIVE 1

HUC NUMBER	HUC12 NAME	AREA (ACRES)	BASE AVERAGE ANNUAL EROSION (TONS/ACRE/YEAR)	PROJECT AVERAGE ANNUAL EROSION (TONS/ACRE/YEAR)	CHANGE	INCREASE OVER BASE (%)	SENSITIVE SPECIES WITHIN THIS HUC
180701020507	Gorman Creek	23,544	29.36	29.47	0.11	0.36	–
180701020509	Liebre Gulch-Piru Creek	14,137	35.27	36.07	0.80	2.26	ARTO
180701020603	Lake Piru-Piru Creek	34,242	66.26	66.40	0.14	0.21	ARTO
180701020305	Middle Castaic Creek	11,920	55.25	55.68	0.42	0.77	ARTO
180701020303	Upper Castaic Creek	24,059	47.35	47.47	0.12	0.24	ARTO
180701020202	Lower Bouquet Canyon	22,072	39.93	40.10	0.17	0.41	ARTO, CRLF
180701020306	Lower Castaic Creek	30,292	41.85	42.32	0.47	1.13	ARTO, CRLF. SAS
180701020402	San Francisquito Canyon	31,691	69.93	69.97	0.03	0.05	ARTO, CRLF
	Average	23,995	48.15	48.43	0.28	0.68	

TABLE 4. RUSLE EROSION RESULTS FOR ALTERNATIVE 2

HUC NUMBER	HUC12 NAME	AREA (ACRES)	BASE AVERAGE ANNUAL EROSION (TONS/ACRE/YEAR)	PROJECT AVERAGE ANNUAL EROSION (TONS/ACRE/YEAR)	CHANGE	INCREASE OVER BASE (%)	SENSITIVE SPECIES WITHIN THIS HUC
180701020301	Elizabeth Lake	11,409	21.93	22.28	0.35	1.59	–
180701020202	Lower Bouquet Canyon	22,072	39.93	40.24	0.31	0.77	ARTO, CRLF
180701020402	San Francisquito Canyon	31,691	69.93	70.76	0.83	1.18	ARTO, CRLF
	Average	21,724	43.93	44.43	0.50	1.18	

TABLE 5. RUSLE EROSION RESULTS FOR ALTERNATIVE 3

HUC NUMBER	HUC12 NAME	AREA (ACRES)	BASE AVERAGE ANNUAL EROSION (TONS/ACRE/YEAR)	PROJECT AVERAGE ANNUAL EROSION (TONS/ACRE/YEAR)	CHANGE	INCREASE OVER BASE (%)	SENSITIVE SPECIES WITHIN THIS HUC
180701020106	Mint Canyon	18,661	39.05	39.79	0.74	1.89	–
180701020107	Sand Canyon-Santa Clara River	38,533	47.69	47.75	0.05	0.11	ARTO, CRLF, SAS
180701020104	Agua Dulce Canyon	18,812	19.51	19.91	0.40	2.04	CRLF, SAS
	Average	25,335	35.42	35.82	0.40	1.35	

ARTO = Arroyo toad (*Anaxyrus californicus*)
CRLF = California red-legged frog (*Rana draytonii*)
SAS = Santa Ana sucker (*Catostomus santaanae*)

Rates of erosion are dependent on scale. Smaller watersheds at higher elevations tend to have higher predicted rates of erosion than larger watersheds at lower elevations. In the Angeles National Forest, smaller watersheds generally have steeper slopes and greater relief, tend to receive a greater amount of precipitation than lower-lying watersheds, and are flushed more readily by storm runoff. Vegetation also plays a role in erosion, acting as a biological barrier by intercepting precipitation and causing it to dissipate its kinetic energy on leaves and other plant structures (Howard 1982). When vegetation is removed, either by natural means (*e.g.*, wildfires) or by artificial means (*e.g.*, vegetative clearing for construction purposes), soils are left relatively open to erosive influences.

Traditionally, the RUSLE model has been applied to agricultural lands where the cover is relatively uniform and slopes are relatively level. Since its development, use of the RUSLE model has been extended to predict erosion in such non-traditional settings as construction sites, reclaimed mine spoils, and erosion on steep slopes in the tropics. In non-traditional settings where the RUSLE model generates a value for A of > 20 tons/acre/year, the expected accuracy rate is ± 35 percent (Yoder *et. al*. 2001).

The purpose of this analysis was not to calculate a precise quantity of sediment delivered to catchments within the study area, but to use the predicted volumes of soil loss to qualitatively compare the erosional effects of each BRRTP alternative route within the Angeles National Forest. In this respect, the predicted magnitude of change between pre- and post-project erosion, and between each alternative, is more useful to planners than a precise prediction of sediment delivered to a given outlet. The results of this analysis will allow for a side-by-side comparison of potential impacts from erosion resulting from each alternative, and allow for a more specific assessment of Project-related potential impacts to sensitive aquatic species within the study areas.

A RUSLE analysis was conducted for the Tehachapi Renewable Transmission Project (TRTP), also located partially within the Angeles National Forest (SCE 2009). Fourteen catchments were modeled in the TRTP analysis; catchment areas ranged from 1,879 acres to 55,471 acres (average area 19,989 acres), and predicted post-project annual erosion levels ranged between 3.6 tons/acre/year and 31.5 tons/acre/year. Predicted annual erosion increase over base values ranged from 0.4 percent to 13.0 percent (average increase over base was 4.06 percent). Predicted erosion increases predicted for the BRRTP are consistent with values predicted for the TRTP, especially considering similarities in terrain, rainfall levels, fire history, and vegetation cover between the two study areas.

It is important to note that the predicted rates of erosion do not reflect the amount of sediment that would be transported out of the watersheds; rather, the predicted values are an estimation of erosion that would occur as a result of construction and operation of the BRRTP. In actuality, much of the sediment eroded from construction areas and roads would be redeposited before leaving the watershed. A Spatially Explicit Sediment Delivery Model (SEDMOD) would be required to predict the quantity of eroded material that leaves the watersheds as sediment.

SEDMOD is expressed as follows:

$$SDR = 39\ A^{-1/8} + \Delta DP$$

Where SDR = sediment delivery ratio
A = watershed area in square kilometers
ΔDP = difference between the composite delivery and its mean value

Delivery Potential is determined as follows:

$$DP = (SG)r(SG)w + (SS)r(SS)w + (SP)r(SP)w + (ST)r(ST)w + (OF)r(OF)w$$

Where SG = slope gradient
SS = slope shape

SR = surface roughness
SP = stream proximity
ST = soil texture
OF = overland flow index
r = parameter rating (1 – 100)
w = weighting factor (0 – 1)

Once gross soil loss and sediment delivery ratio are determined, sediment load is estimated as follows:

$$SY = A \cdot SDR$$

Where SY = Sediment Yield
A = Gross Soil Loss
SDR = Sediment Delivery Ratio

SEDMOD modeling was outside the scope of this analysis; however, SEDMOD modeling using RUSLE analysis results for the TRTP watersheds estimated that only 10 percent of the predicted annual erosion would reach the catchment outlets as sediment (SCE 2009). Taking into account the similarities of topography, soils, and watershed areas between the TRTP and the BRRTP study areas, it is reasonable to expect similar predicted sediment delivery values for the BRRTP study area.

It is also important to note that, due to the scale of this analysis, the predicted post-Project erosion values do not reflect implementation of BMPs or mitigation measures. Where site conditions are modeled assuming implementation of BMPs, RUSLE erosion predictions are from 52 percent to 93 percent lower than without BMP implementation (Wachal *et. al*. 2008).

The post-Project erosion rates predicted in this analysis represent a worst-case scenario in which no BMPs or mitigation measures are implemented and all eroded material leaves the study area as sediment. The BRRTP would implement appropriate erosion- and sediment-control BMPs and mitigation measures throughout all stages of construction. Furthermore, the model reflects erosion rates within the first year after construction, and does not account for natural revegetation. Assuming the more conservative estimate of 52 percent reduction in erosion rates, implementation of erosion- and sediment-control BMPs and mitigation measures would reduce average predicted post-Project erosion rates in Alternative 1 to 48.30 tons/acre/year, in Alternative 2 to 44.18 tons/acre /year and in Alternative 3 to 35.63 tons/acre/year. Increases in erosion rates over base would average 0.33 percent in Alternative 1, in Alternative 2 to 0.58 percent, and in Alternative 3 to 0.64 percent.

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APPENDIX C: DETAILED CONSTRUCTION, OPERATION AND MAINTENANCE PROCESS

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BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

Detailed Construction, Operations and Maintenance Process

POWER ENGINEERS

BRRTP CONSTRUCTION, OPERATION AND MAINTENANCE

1.0 230 KV DOUBLE-CIRCUIT TRANSMISSION LINE

1.1 CONSTRUCTION SEQUENCE

Construction of a transmission line involves the following general sequence of events: surveying the centerline; identifying and constructing access roads; clearing right-of-way and tower sites (including construction yards and batch plants); installing foundations; assembling and erecting the towers; clearing, pulling, tensioning, and splicing sites; installing ground wires and conductors; installing counterpoise; switching station tie in; and cleanup and site reclamation. Various phases of construction would occur at different locations throughout the construction process for the Barren Ridge Renewable Transmission Project (BRRTP). This would require several contractors operating at the same time and in different locations.

The following section describes the construction components necessary for the assembly and installation of the proposed double-circuit transmission line. The description of transmission line construction sequencing and estimates for construction sites would also be relevant for the additional transmission line construction activities associated with the installation of the Castaic-Haskell Canyon #4 circuit on existing structures, and the reconductoring of the Barren Ridge – Rinaldi (BR-RIN) transmission line between the Barren Ridge Switching Station and the Rinaldi Substation.

1.1.1 Surveying Activities

The Los Angeles Department of Water and Power (LADWP) must first obtain survey permits for the portion of the Project crossing federal lands managed by the U.S. Department of Agriculture, Forest Service (USFS) and the U.S. Department of the Interior, Bureau of Land Management (BLM), and rights-of-entry for private lands. This would include the issuance of a 50-year term Special Use Permit to LADWP by the USFS and a 30-year term (renewable) Right-of-Way Grant issued by the BLM. For survey on affected private lands, LADWP would need to negotiate rights-of-entry with the local landowners. Once survey permits are obtained, construction survey work would consist of locating the centerline, tower center hubs, ROW boundaries, and tower access roads, some of which would be located outside of the ROW boundaries. Whenever possible, location of the ROW and Project facilities would be laid out to avoid identified sensitive resources. All of these activities would begin approximately one year prior to the start of construction. Cultural resources and necessary additional threatened and endangered species intensive surveys would be conducted once the survey of the centerline and access roads is completed and clearly marked.

Necessary pre-construction geotechnical investigations would include geological field mapping of each tower site, and borings by drill rig for soil sampling and bedrock corings to determine soil densities and bedrock strength. Test locations would include angle points between the Barren Ridge Switching Station and the Angeles National Forest (ANF), and five to ten locations along the selected alignment within the ANF. Seismic analysis of tower sites for slope stability would also be necessary in mountainous areas of the ANF. Existing roads would be used as much as possible, but some new roads could be required.

1.1.2 Preconstruction Weed Removal

LADWP/ANF/BLM shall prepare and implement a comprehensive, adaptive Weed Control Plan on NFS/BLM lands for pre-construction and construction invasive weed abatement. A pre-construction weed inventory shall be conducted by surveying all areas subject to ground-disturbing activity, including, but not limited to, tower pad preparation and construction areas, tower removal sites, pulling and tensioning

sites, assembly yards, and areas subject to grading for new or improved access and spur roads. In areas subject to ground disturbance, weed infestations shall be treated prior to construction according to control methods and practices for invasive weed populations designed in consultation with the USFS/BLM. The Weed Control Plan shall be updated and utilized for eradication and monitoring post construction. Weed control treatments shall include all legally permitted herbicide, manual, and mechanical methods applied with the authorization of the USFS/BLM. The application of herbicides shall be in compliance with all state and federal laws and regulations under the prescription of a Pest Control Advisor (PCA), where concurrence has been provided by the USFS/BLM, and implemented by a Licensed Qualified Applicator. Herbicides shall not be applied during or within 24 hours of a scheduled rain event. Herbicides shall not be used within Riparian Conservation Areas (RCAs) on the ANF without approval of the USFS. In riparian areas, only water-safe herbicides shall be used. Herbicides shall not be applied when wind velocities exceed six miles per hour. Where manual and/or mechanical methods are used, disposal of the plant debris will follow the regulations set by the USFS/BLM. The timing of the weed control treatment shall be determined for each plant species in consultation with the USFS/BLM (on NFS/BLM lands, respectively) with the goal of controlling populations before they start producing seeds.

1.1.3 Construction of Access Roads

The construction, operation, and maintenance of the proposed transmission line would require that heavy vehicles access tower sites along the right-of-way. Where new access roads are required, they would be constructed to support the weight of these vehicles and would typically be 16 feet wide, consisting of a 14-foot driving surface with a side drainage system between one and two feet in width. Permanent roads would be constructed where necessary for operation or maintenance, or where it is required by the landowner or land managing agency. Road standards would be addressed specifically in the Construction, Operation, and Maintenance Plan (COM Plan) and the Plan of Development (POD) during the engineering phase of the Project, and prior to a Notice to Proceed from the USFS and BLM.

Dependent upon final design and mitigation, some temporary access roads may be constructed as part of the Project. These would typically be 16 foot wide roads, but would typically have no improved ditch drainage systems. Most temporary roads would be constructed by crushing vegetation. In some areas, material and topsoil from the temporary roads would be bladed to one or both sides to facilitate rehabilitation. Following construction, bladed material can be re-spread across the disturbed road section. Seeds and roots contained within the re-spread topsoil layer normally provide a natural source for new growth.

Existing paved and unpaved highways and roads would be used where possible. Roads along existing utility corridors would also be used where possible to minimize new access road construction. In locations where existing roads can be used that are located in close proximity to the proposed centerline of the transmission line, only spur roads to the tower sites would be required. New access roads and spur roads would likely be constructed into the right-of-way where existing roads do not exist. Table 1 lists the estimated ground disturbance of access and spur roads based on terrain.

TABLE 1. ACCESS AND SPUR ROAD GROUND DISTURBANCE ESTIMATES

Ground Disturbance Categories	Access Roads		Spur Roads (average width 16 feet)	
	Average Miles of Roads Per Mile of Transmission Line	Average Acres of Disturbance Per Mile of Transmission Line*	Average Miles of Roads Per Mile of Transmission Line	Average Acres of Disturbance Per Mile of Transmission Line
1. Existing roads or agricultural land; no widening anticipated	n/a	n/a	0.3	0.6
2. Existing 8 ft wide roads that require an additional 8 ft of widening	1.0 to 2.5	Permanent 0.9 to 2.4	0.3	0.6
3. Construct new road on flat terrain (0-10%)	1.0 to 2.5	Permanent 1.9 to 4.8	0.3	0.6
4. Construct new road on sloping terrain (10-20%)[1]	2.5 to 4.0	Temporary 7.3 to 11.6 Permanent 4.8 to 7.7	0.5	1.0
5. Construct new road on steep terrain (20-30%)[1, 2]	4.0 to 6.0	Temporary 23.3 to 34.9 Permanent 7.7 to 11.6	0.8	1.6
6. Construct road on very steep terrain (greater than 30%)[1, 2]	6.0 to 8.0	Temporary 69.8 to 93.1 Permanent 11.6 to 15.5	1.0	1.9

[1] After construction of the transmission line, all access roads in Categories 4 through 6 would be restored back to 16 feet wide.

[2] On steep terrain (approximately 25% or higher) with limited access on the Angeles National Forest, the USFS may require Helicopter Mitigation.

Wherever possible, roads would be built at right angles to streams and washes. Culverts or other drainage structures would be installed as necessary across drainages, but the roads would usually follow the natural grade. In addition, road construction would include dust-control and erosion control measures in sensitive areas. All existing roads would be left in a condition equal to or better than their condition prior to the construction of the transmission line without changing their service level. Gates would be installed where required at fenced property lines to restrict general vehicular access from or to the right-of-way. Where identified within the environmental studies for mitigation purposes, access roads may be excluded or limited within specific sensitive areas, such as Riparian Conservation Areas (RCAs) on the Angeles National Forest.

1.1.4 Clearing Right-of-Way

The clearing of some natural vegetation may be required. However, selective clearing would be performed only when necessary to provide for surveying, electrical safety clearances, line reliability, and maintenance. Trimming or removal of mature vegetation, under or near the conductors, would be done to provide adequate electrical clearance as required by the National Electrical Safety Code, the North American Electrical Reliability Corporation, and California Public Utilities Commission General Order 95 standards.

Trees that could fall onto the lines or affect lines during wind-induced line swing would be removed. Normal clearing procedures are to top or remove large trees and not disturb smaller trees. Where there is a direct conflict between trees and clearance standards, the removal of trees would be jointly reviewed and agreed upon between LADWP and the owners or managers of the property. Rights-of-way would not be chemically treated unless necessary to comply with requirements of a permitting agency. On National Forest System (NFS) lands, approved herbicides would be utilized within the Project area on select invasive plant species. Invasive plant surveys and control would continue for the life of the Project.

1.1.5 Tower Site Clearing

After access roads are developed, preparation of individual structure sites would be required to install the structures. At tower locations, work areas of up to 200 feet squared in flat terrain and up to 200 by 250 feet in areas with slopes greater than eight percent may be needed. Within the work areas, at some tower locations, a level cleared area (pad) may be necessary to complete the construction of the towers. However, many tower sites would be considerably smaller depending on the size of the tower, the terrain, resource considerations, and whether helicopter construction was used, among other factors. The work area would be required for the location of tower footings, assembly of the tower, and the necessary crane maneuvers. Vegetation would be mostly crushed, and cleared only when necessary. All pads not needed for normal transmission line maintenance would be graded to blend as near as possible with the natural contours, and revegetated where required by a permitting agency. See Table 2 for tower specifications and Table 5 for estimated temporary and permanent ground disturbance associated with the double-circuit steel lattice towers.

TABLE 2. DOUBLE-CIRCUIT STEEL LATTICE TOWER SPECIFICATIONS

Tower Placement Details	Specifications	
	Categories 1 through 3 Flat (0 – 10% slope)	Categories 4 through 6 Mountainous (10 – 30% slope)
Towers per mile	±5	±5
Average span length	1,100 ft.	1,000 ft.
Average height		
Ground to lowest attachment	115 ft.	105 ft.
Upper body height	52 ft.	52 ft.
Overall tower height	167 ft.	157 ft.
Typical range of heights of new towers	120 – 195 ft.	110 – 185 ft.

1.1.6 Staging Areas and Batch Plants

It is anticipated that one or two construction yards or staging areas would be required for materials storage, construction equipment, construction vehicles, and temporary construction offices. Staging areas would be approximately five acres in size, and located centrally or near each end of the transmission line route. The staging areas would be located on previously disturbed private land and would be level and surfaced with crushed aggregate base. The LADWP would negotiate with landowners for specific locations of the staging areas.

Concrete for use in constructing foundations would be dispensed from a portable concrete batch plant located at approximately 15 mile intervals. A rubber-tired flatbed truck and tractor would be used to relocate each plant along the right-of-way. Commercial ready-mix concrete would be used when access to tower construction sites is economically feasible.

The construction yards and batch plants would be located on private land and serve as field offices, reporting locations for workers, parking space for vehicles and equipment, sites for material storage, and stations for equipment maintenance. Facilities would be fenced and their gates locked. Security guards would be stationed where needed. See Table 3 for estimated ground disturbance associated with the staging sites and batch plants.

TABLE 3. STAGING SITES AND BATCH PLANT GROUND DISTURBANCE ESTIMATES

Disturbance Description	**Categories 1 through 3 Flat (0 – 10% slope)***	
	Maximum Estimated Disturbance Dimension per site	**Average Disturbance**
Material staging sites (2 sites)	400 x 540 ft. (5 acres)	N/A
Concrete batch plants (3 sites maximum)	2 acres, 30 mile haul distance	0.2 acre per mile
Total Average Disturbance	**0.2 acre per mile**	

*Material staging sites and concrete batch plants would not be built on terrain above 10% slope.

1.1.7 Foundation Installation

Tower foundations for the lattice structures would consist of drilled concrete piers. The foundation process would start with the boring of four holes for each lattice structure or one hole for each TSP. The holes would be bored using truck- or track-mounted excavators with various diameter augers to match diameter and depth requirements of the foundation sizes.

For a typical suspension lattice tower, each hole would typically be four feet in diameter and 25 feet deep, depending on soil conditions. For the larger angle or dead-end structures, foundations could be up to 30 or more feet deep, depending on soil conditions. Each foundation would extend above the ground line between six inches and four feet. In extremely sandy areas, soil stabilization by water or a gelling agent may be used prior to excavation. Refer to Figure 1 and Figure 2 for typical foundation details for double-circuit towers.

Following excavation of the foundation holes, each footing would be constructed by placing formwork, reinforcing steel and a tower stub into the foundation hole, positioning the stub, and encasing it in concrete. Reinforcing steel cages would be assembled at laydown yards and delivered to each structure location by flatbed truck. Spoil material would be spread around the tower site and used for fill where suitable. The foundation excavation and installation would require access to the site by a power auger or drill, a crane, material trucks, and ready-mix trucks. Typical suspension structures would require approximately 25 to 40 cubic yards of concrete and dead-end structures would require approximately 120 cubic yards of concrete.

FIGURE 1. TYPICAL FOUNDATION DESIGN FOR THE DOUBLE-CIRCUIT STEEL LATTICE TOWERS

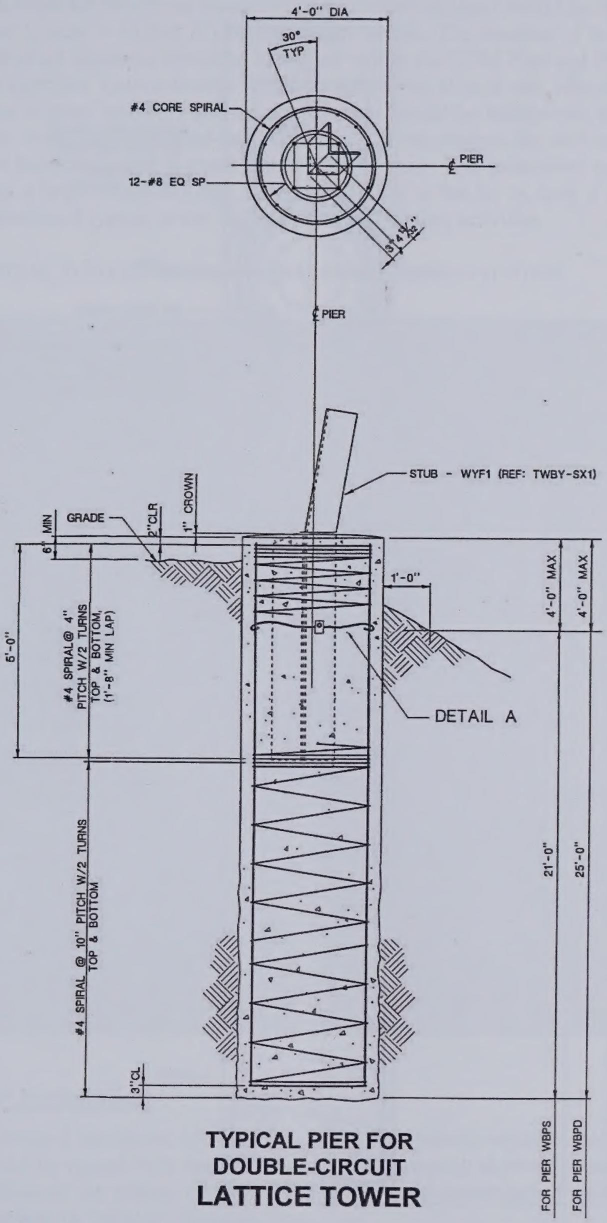
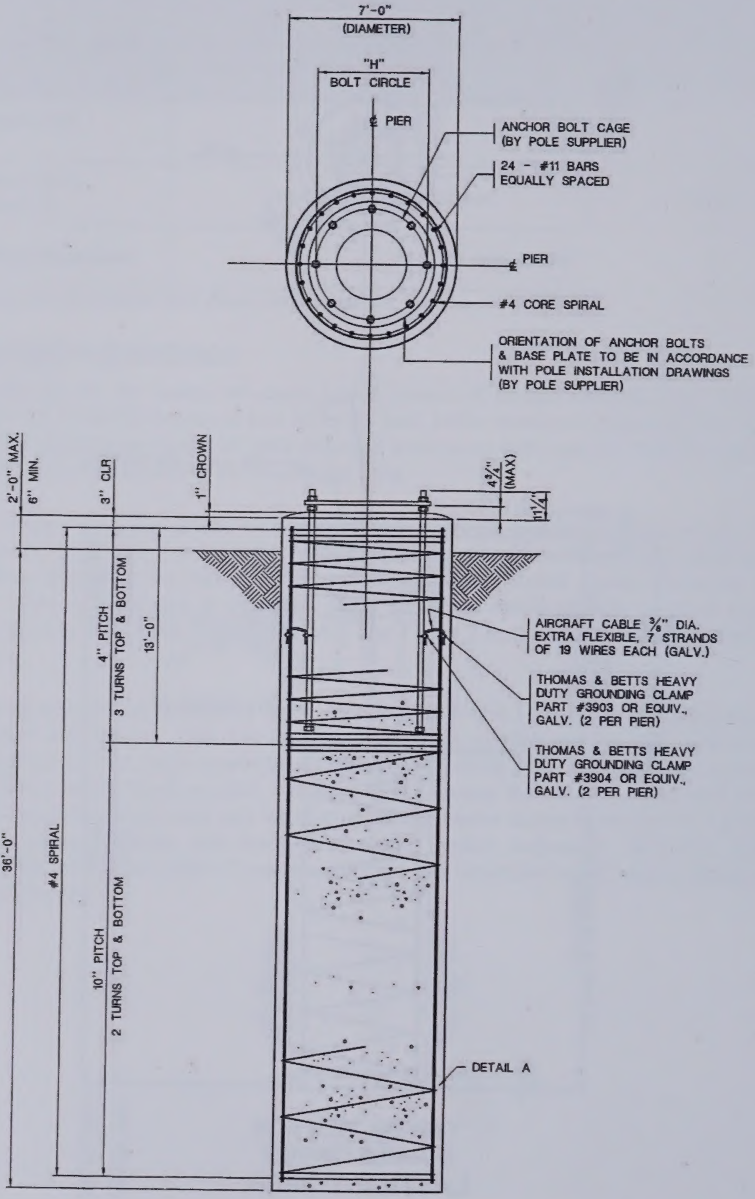

4'-0" DIA
30° TYP
#4 CORE SPIRAL
12-#8 EQ SP
℄ PIER
3"
4 1/2"
℄ PIER
STUB - WYF1 (REF: TWBY-SX1)
GRADE
6" MIN
2"CLR
1" CROWN
5'-0"
#4 SPIRAL@ 4" PITCH W/2 TURNS TOP & BOTTOM, (1'-8" MIN LAP)
1'-0"
4'-0" MAX
4'-0" MAX
DETAIL A
#4 SPIRAL @ 10" PITCH W/2 TURNS TOP & BOTTOM
21'-0"
25'-0"
3"CL
TYPICAL PIER FOR DOUBLE-CIRCUIT LATTICE TOWER
FOR PIER WBPS
FOR PIER WBPD

FIGURE 2. **TYPICAL FOUNDATION DESIGN FOR TUBULAR STEEL POLES**

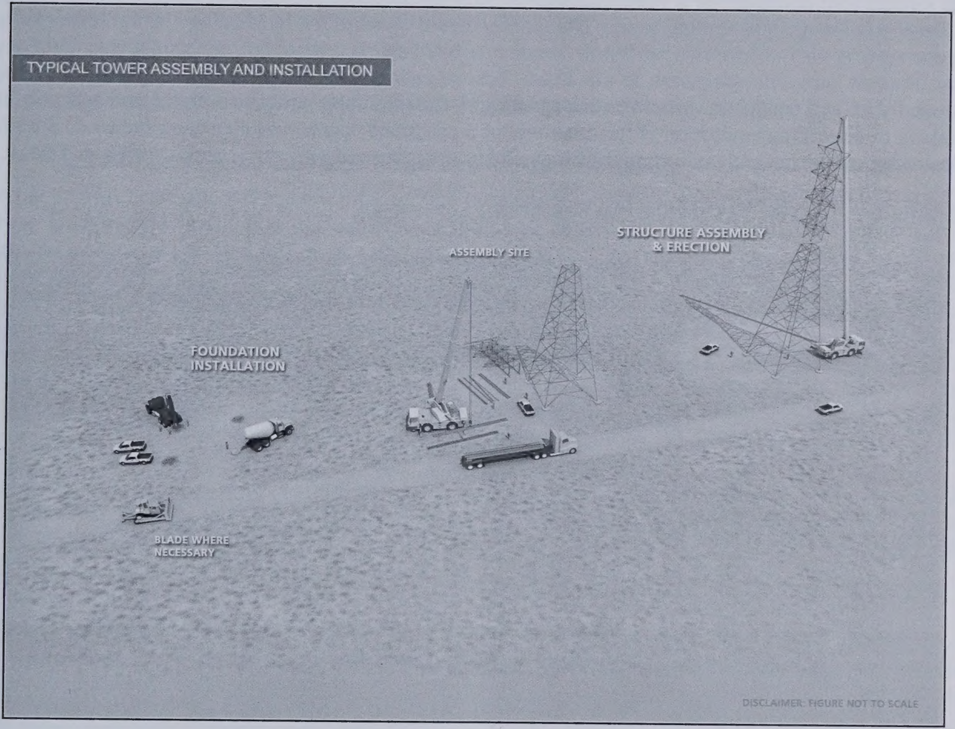

7'-0"
(DIAMETER)
"H"
BOLT CIRCLE
℄ PIER
ANCHOR BOLT CAGE
(BY POLE SUPPLIER)
24 - #11 BARS
EQUALLY SPACED
℄ PIER
#4 CORE SPIRAL
ORIENTATION OF ANCHOR BOLTS
& BASE PLATE TO BE IN ACCORDANCE
WITH POLE INSTALLATION DRAWINGS
(BY POLE SUPPLIER)
2'-0" MAX.
6" MIN.
3" CLR
1" CROWN
4¾" (MAX)
1¼"
4" PITCH
3 TURNS TOP & BOTTOM
13'-0"
AIRCRAFT CABLE ⅜" DIA.
EXTRA FLEXIBLE, 7 STRANDS
OF 19 WIRES EACH (GALV.)
THOMAS & BETTS HEAVY
DUTY GROUNDING CLAMP
PART #3903 OR EQUIV.,
GALV. (2 PER PIER)
THOMAS & BETTS HEAVY
DUTY GROUNDING CLAMP
PART #3904 OR EQUIV.,
GALV. (2 PER PIER)
36'-0"
#4 SPIRAL
10" PITCH
2 TURNS TOP & BOTTOM
DETAIL A

**TYPICAL PIER FOR
DOUBLE-CIRCUIT
POLE**

1.1.8 Tower Assembly and Installation

The size of the work areas for structures (assembly and installation sites) would be approximately 40,000 to 50,000 square feet (1 acre = 43,560 ft^2) depending on terrain. The location of these sites has not yet been determined, but exact locations would be identified within the COM Plan and POD prior to a Notice to Proceed from the agencies. Lattice towers would be assembled at each site, installed and bolted to the foundations. Bundles of steel members and associated parts would be transported to each tower site by truck. Steel members would be assembled into subsections of convenient size and weight on the ground. Assembly would be facilitated with a small rough-terrain crane. The assembled subsections would be erected into place by a large crane and then fastened together in the air to form a complete tower. See Figure 3 for an illustration of typical tower assembly and installation activities.

FIGURE 3. **TYPICAL TOWER ASSEMBLY AND INSTALLATION ACTIVITIES**


TYPICAL TOWER ASSEMBLY AND INSTALLATION
STRUCTURE ASSEMBLY & ERECTION
ASSEMBLY SITE
FOUNDATION INSTALLATION
BLADE WHERE NECESSARY
DISCLAIMER: FIGURE NOT TO SCALE

1.1.9 Conductor Installation

After the towers are erected, insulators, hardware, and stringing sheaves would be delivered to each tower site. The towers would be rigged with insulator strings and stringing sheaves at each ground wire and conductor position. Sheaves are rollers, temporarily attached to the lower end of the insulators that allow the conductor to be pulled, or "strung," along the line.

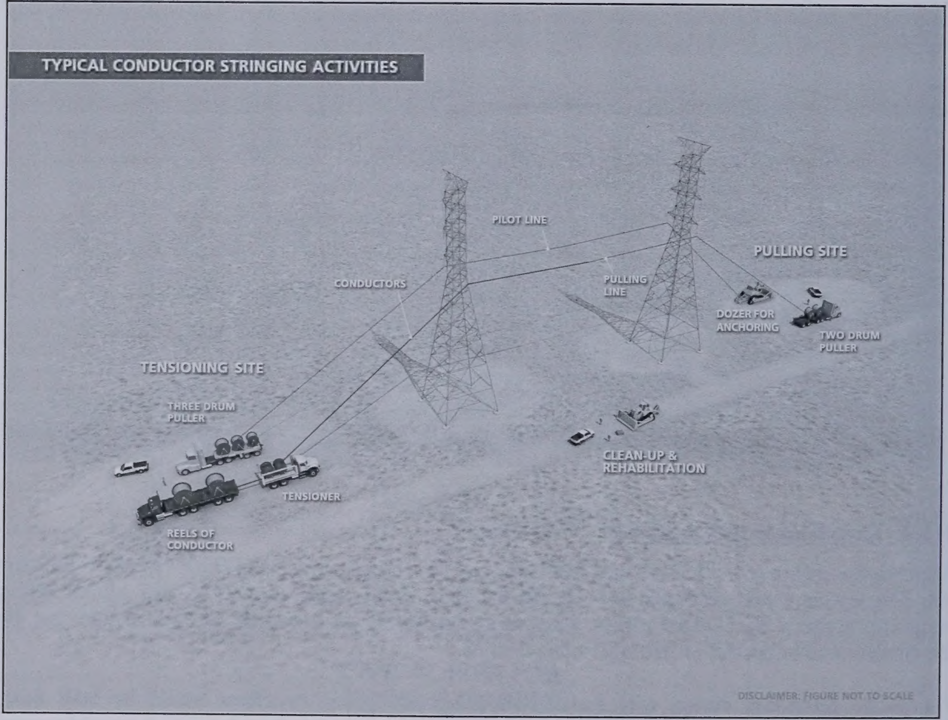
For public protection during wire installation, temporary guard structures would be built next to highways, railroads, power lines, structures, and other major obstacles. Guard structures would consist of

H-frame poles placed on either side of an obstacle. These structures would prevent ground wire, conductor, or equipment from falling on an obstacle. Equipment for installing guard structures would include augers, line trucks, pole trailers, and cranes. A guard structure would be anticipated to be necessary every five miles. The amount of ground disturbance would typically be 200 feet by 300 feet. The guard structures would be left in place until conductors and ground wires were strung, tensioned and clipped; this time frame would be approximately three weeks or longer depending on conditions. Guard structures may not be necessary for small roads. In such cases, other safety measures, such as barriers, flagmen, or other traffic control, would be used.

Pilot lines would be pulled (strung) from tower to tower by a helicopter and threaded through the stringing sheaves at each tower. The pilot line can be used to pull in the ground wire, but is used to pull in a larger-diameter, stronger pulling line for the conductor. The larger-diameter, stronger line—pulling line—would be attached to the conductors to pull them onto towers. This process would be repeated until the ground wire or conductor is pulled through all sheaves. Bundled conductors would be pulled together with the assistance of a running board. The running board attaches the bundled conductor to the pulling line.

Ground wire and conductors would be strung using powered pulling equipment at one end and powered braking or tensioning equipment at the other end of a conductor segment as shown on Figure 4. Sites for tensioning equipment and pulling equipment would be approximately 2.5 miles apart.

FIGURE 4. TYPICAL CONDUCTOR STRINGING ACTIVITIES


TYPICAL CONDUCTOR STRINGING ACTIVITIES
PILOT LINE
PULLING SITE
CONDUCTORS
PULLING LINE
DOZER FOR ANCHORING
TWO DRUM PULLER
TENSIONING SITE
THREE DRUM PULLER
TENSIONER
REELS OF CONDUCTOR
CLEAN-UP & REHABILITATION
DISCLAIMER: FIGURE NOT TO SCALE

To the greatest extent practical, pulling and tensioning sites would be located within the transmission ROW. However, some pulling and tensioning sites may occur outside the ROW. The tensioning and pulling sites could be as large as 200 feet by 500 feet, however they would be limited in size depending on each specific location and what is reasonable for safe construction practices. The size of each site would be limited as much as possible and would be designed in coordination with the responsible property owner or land management agency. Depending on topography, some grading may be required at pulling and tensioning sites to create level pads for equipment. Tensioners, line trucks, wire trailers, and tractors needed for stringing and anchoring the ground wire or conductor would be located at the tensioning sites. A puller, line trucks, sag cat and tractors would be needed for pulling and temporarily anchoring the ground wire and conductor. Table 5 includes ground disturbance estimates for conductor installation (helicopter fly yards, portable helicopter landing pads, pulling and stringing sites, and sleeving and stringing operations).

After installing the conductor ground wire or fiber optic shield wire, sagging, clipping and dead-ending activities, terminating the conductors at dead-end structures, would be performed. This process would involve adjusting the position of the conductors and shield wires, removing stringing sheaves, and permanently attaching the conductor to the insulators with specialized hardware.

1.1.10 Counterpoise Installation and Grounding Practices

Part of standard construction practice prior to wire installation would involve measuring the resistance of tower footings and installation of counterpoise (grounds) as needed. To determine if a tower would require counterpoise, ground resistance measurements would be taken at towers sites after the installation of the foundations and structures. The measurements would be evaluated to determine the numbers and locations of structures requiring counterpoise. If the resistance to remote earth for each transmission tower is greater than 10 ohms, counterpoise (grounds) would be installed to lower the resistance to 10 ohms or less. Counterpoise would consist of a bare copper-clad or galvanized steel cable buried a minimum of 12 inches deep, extending horizontally from one or more tower legs for approximately 200 feet. Typical counterpoise installation would include two installations per structure on opposite tower legs. Four installations per tower could be required in certain circumstances.

In addition to counterpoise installation, standard grounding practices during construction would include both temporary and permanent grounding of equipment and structures, such as fences or pipelines, as necessary to reduce any potential magnetically induced voltages to harmless levels. Such practices could include electrical isolation of equipment or structures and the installation of grounding wires.

1.1.11 Switching Station Tie-in

At the proposed Haskell Canyon Switching Station, the transmission lines would be connected into and out of the switching station through dedicated station structures within the switching station, commonly referred to as "bus."

1.2 UPKEEP OF CONSTRUCTION SITES

Construction sites, material storage yards, and access roads would be kept in an orderly condition throughout the construction period. Refuse and trash would be removed from the sites and disposed of in an approved manner. Oils and fuels would not be dumped along the line. Oils or chemicals would be hauled to a disposal facility authorized to accept such materials. No open burning of construction trash would occur without agency approval.

Microtrash would be cleaned daily from all work areas within known California condor habitat. Microtrash is a term used to describe small bits of debris like bottle caps, rags, screws, bolts, wires, glass, and other materials found in condor habitat.

1.3 HAZARDOUS MATERIALS WITHIN THE PROJECT AREA

Petroleum products such as gasoline, diesel fuel, helicopter fuel, crankcase oil, lubricants, and cleaning solvents would be present within the Project area during construction. These products would be used to fuel, lubricate, and clean vehicles and equipment. These products would be containerized by fuel trucks or by approved containers. When not in use, hazardous materials would be properly stored to prevent drainage or accidents.

Hazardous materials would not be drained onto the ground or into streams or drainage areas. Totally enclosed containment shall be provided for all trash. All construction waste including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials would be removed to a disposal facility authorized to accept such materials.

All construction, operation, and maintenance activities would comply with all applicable federal, state, and local laws and regulations regarding the use of hazardous substances.

The construction or maintenance crew foreman would insure that all applicable laws are obeyed. In addition, an on-site inspector would be present during construction to make sure that all hazardous materials are used and stored properly. A health and safety plan would be developed as part of the COM Plan and POD during the engineering and preconstruction phase of the Project.

1.4 SITE RECLAMATION

The ROW, including temporary construction sites, and any temporary ground disturbance outside of the ROW that may have been caused during or due to the construction of the Project (e.g., temporary access roads, staging sites, assembly yards) would be restored as required by the property owner or land management agency. All practical means would be used to restore the land to its original contour and to restore natural drainage patterns along the ROW. Because revegetation would be difficult in many areas of the Project where precipitation is minimal, it would be important to minimize disturbance during construction. All practical means would be used to increase the chances of vegetation reestablishment in disturbed areas.

The total construction period would be approximately two years. The COM Plan that would be completed during the engineering and preconstruction phase of the Project would address specific site reclamation of all disturbed areas.

1.5 FIRE PROTECTION

A Fire Management Plan would be developed for the Project and all applicable fire laws and regulations would be observed during the construction period. All personnel would be advised of their responsibilities under the applicable fire laws and regulations, including taking practical measures to report and suppress fires.

1.6 CONSTRUCTION MONITORING

An approved compliance program would be developed to address mitigation requirements associated with the avoidance of sensitive plant and animal species, cultural sites, or other sensitive features located

within or adjacent to the Project. Prior to construction, these measures will be described in detail and included in the POD.

1.7 THREE-CIRCUIT TOWER MITIGATION

A temporary transmission line would be constructed to keep the BR-RIN circuit energized during construction of the three-circuit towers. After the temporary line is constructed, the existing BR-RIN single-circuit towers would be removed to allow the new three-circuit towers to be constructed within the existing ROW. Once construction of the three-circuit towers is completed, the temporary transmission line would be removed.

The temporary transmission line would be 7.5 miles long and would consist of wood and steel single poles with an average height of 95 feet, a 3-foot by 3-foot footprint, and an average of eight poles per mile. Construction would occur within a temporary 80- to 100-foot ROW. Refer to Table 4 for specifications and to Table 5 for ground disturbance estimates. The majority of the temporary transmission line would be constructed along San Francisquito Road. Portions would also be constructed along Elizabeth Lake Road and Johnson Road. Pole placement would be adjacent to public roadways wherever possible. If necessary, temporary ROW on private property would be needed where poles could not be placed within public road ROW. The majority of poles would be direct-embedded when set in place and would not require a permanent foundation. Where additional strength is necessary at larger angle points, steel poles would be required, which could require an excavation approximately 6 feet in diameter by 20 feet deep to accommodate the concrete pier foundation that would be cast in place. Once all the poles have been constructed and the conductor installed, the existing BR-RIN circuit would be connected into the temporary line and energized. The construction would require establishment of a staging area, work areas around poles, and pull and tension sites. Access to pole sites and pull and tension sites would be from the adjacent roadways.

Approximately seven miles of the existing BR-RIN single-circuit towers would be removed, with existing ROW utilized to access the existing towers. The new three-circuit towers would be placed within the existing ROW, utilizing existing access roads. Helicopter Mitigation, as described in this section below, would be applied in steeper terrain crossing the Angeles National Forest if additional access is required. If additional access roads, considered to be longer than 300 feet, are necessary, specific locations and construction method (either helicopter or conventional) would be coordinated with the USFS. The new three-circuit tower would require a 25-foot by 30-foot structure footprint and an average of seven structures per mile; the average structure height would be 170 feet, with a maximum tower-to-tower span length of 780 feet. Structures would be installed in the same locations as the existing BR-RIN structures within the limits of standard tower design. The construction process for the new three-circuit towers would be the same as the double-circuit towers discussed above. After completion of construction of the three-circuit towers, the temporary transmission line would be removed and all temporary staging and work area land disturbances would be restored as close to previous conditions as possible and revegetated as required. Restoration practices would be consistent with Section 1.11 Decommissioning of Transmission Lines.

TABLE 4. THREE-CIRCUIT TOWER SPECIFICATIONS

Tower Placement Details	Specifications	
	Triple-Circuit	Temporary Transmission Line
ROW acquisition	None (within existing)	80-100 ft
Structures per Mile	7	8
Average span length	750 ft	650 ft

Tower Placement Details	Specifications	
	Triple-Circuit	Temporary Transmission Line
Average height (ft)		
Ground to lowest attachment	120	60
Upper body height	50	45
Overall tower height	170	105
Typical range of heights of new towers	150 - 180 ft.	95 - 105 ft.

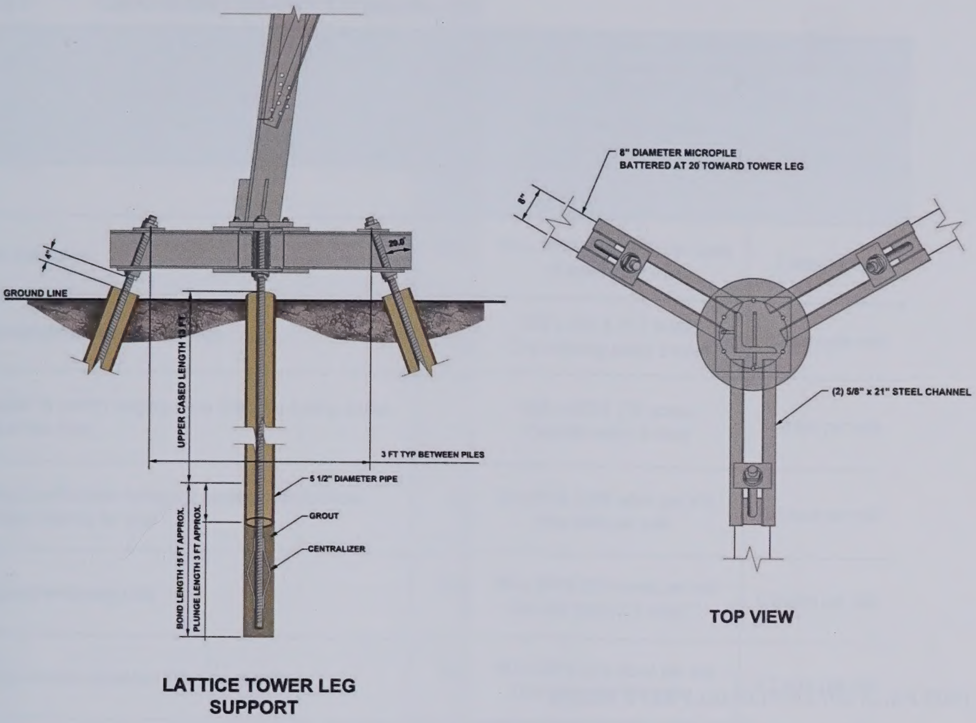
1.8 HELICOPTER MITIGATION

The following sites and ground disturbing construction activities would be required to construct the new transmission line within the identified helicopter construction areas: portable landing pads, helicopter fly yards/staging areas and associated temporary access roads, tower structure vegetation clearing, guard structures at major crossings, and access road pullouts. Refer to Table 5 for ground disturbance estimates for the Helicopter Mitigation.

The transmission line materials (tower steel, conductor reels, structure hardware, etc.) would be delivered by truck to the helicopter fly yards/staging areas. Vegetation clearing may be required at these sites to ensure safe working conditions. The fly yards/staging areas would serve as helicopter support yards for fueling and maintenance, as well as for the transport of materials and personnel. Towers may also be assembled in sections at these yards prior to delivery to the tower sites. Heavy lift helicopters would then fly the towers from the yards to the tower sites.

Portable landing pads would be located at each tower site. These pads would allow helicopters to load and unload personnel, tools, and equipment necessary for construction of foundations and assembly of tower structures. Helicopter-constructed towers that would not be in close proximity to existing access roads would utilize micropile foundations. For each tower leg, micropile foundations would use a group of three to eight 6- to 9-inch diameter casings that would be drilled and grouted into the ground. The exposed portion of the pile group would be encased in a reinforced concrete cap from the top of the casings to a depth anywhere from one to eight feet below the ground surface, depending on the terrain. Figure 5 illustrates the plan view and sections of a micropile foundation.

FIGURE 5. MICROPILE FOUNDATION


4"
20.0°
GROUND LINE
UPPER CASED LENGTH 13 FT
3 FT TYP BETWEEN PILES
5 1/2" DIAMETER PIPE
GROUT
CENTRALIZER
BOND LENGTH 15 FT APPROX.
PLUNGE LENGTH 3 FT APPROX.
8" DIAMETER MICROPILE
BATTERED AT 20 TOWARD TOWER LEG
8"
(2) 5/8" x 21" STEEL CHANNEL

LATTICE TOWER LEG SUPPORT

TOP VIEW

Conductor installation would proceed as for double-circuit tower installation. The equipment necessary for conductor installation would be large, heavy construction equipment that could only be brought in by truck. Some NFS roads could need maintenance or improvement to allow pulling and tensioning, but no new access or spur roads would be created for conductor installation on the helicopter-constructed towers.

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TABLE 5 GROUND DISTURBANCE ESTIMATES FOR THE PROPOSED 230 KV DOUBLE-CIRCUIT TRANSMISSION LINE

Disturbance Description	Double-Circuit Steel Lattice Towers with Helicopter Stringing of Conductors		Three-Circuit Tower Mitigation (Three-Circuit Steel Lattice Towers with Helicopter Stringing of Conductors)				Helicopter Mitigation (Steel Lattice Towers with Helicopter Installation of Towers and Conductors)	
			Three-Circuit		Temporary Transmission Line			
	Estimated Disturbance Dimension	Average Disturbance	Estimated Disturbance Dimension	Average Disturbance	Estimated Disturbance Dimension	Average Disturbance	Estimated Disturbance Dimension	Average Disturbance
	Temporary Disturbance During Installation							
Tower installation	200 x 200 ft. (0.9 acre) per tower ±5 towers per mile[1]	4.6 acres per mile	200 x 200 ft. (0.9 acre) per tower ±7 towers per mile	6.4 acres per mile	50 X 100 ft. (0.1 acre) per tower ±8 towers per mile	0.9 acre per mile	100 x 100 ft. (0.2 acre) per tower ±5 towers per mile	1 acre per mile
Guard structures at major crossings	200 x 300 ft. (1.4 acres) One crossing every 5 miles	0.3 acre per mile	200 x 300 ft. (1.4 acres) One crossing every 5 miles	0.3 acre per mile	40 X 100 ft. (0.09 acres) One crossing every 5 miles	0.02 acre per mile	200 x 300 ft. (1.3 acres) One crossing every 5 miles	0.3 acre per mile
Helicopter fly yards / staging areas (includes fueling station at one of the sites)	200 x 200 ft(0.9 acre) One site every 5 miles	0.2 acre per mile	200 x 200 ft (0.9 acre) One site every 5 miles	0.2 acre per mile	200 x 200 ft (0.9 acre) One site every 5 miles	0.2 acre per mile	650 x 650 ft. (10 acres) One site every 5 miles	2 acres per mile
Landing area/Portable helicopter landing pads (includes vegetation clearing for site)	50 x 50 ft(0.06 acre) per site One site every 3.5 miles	0.02 acre per mile	50 x 50 ft (0.06 acre) per site One site every 3.5 miles	0.02 acre per mile	50 x 50 ft (0.06 acre) per site One site every 3.5 miles	0.02 acre per mile	50 x 50 ft. (0.06 acre) per site Five sites per mile	0.3 acre per mile
Pulling and tensioning sites	200 x 500 ft (2.3 acres) per site One site every 2.5 miles[2]	0.9 acre per mile	200 x 500 ft (2.3 acres) per site One site every 2.5 miles**	0.9 acre per mile	200 x 500 ft (2.3 acres) per site One site every 2.5 miles**	0.9 acre per mile	200 x 500 ft (2.3 acres) per site One site every 2.5 miles**	0.9 acre per mile
Sleeving and miscellaneous stringing operations	100 x 200 ft. (0.5 acre) per site One site every 2.5 miles	0.2 acre per mile	100 x 200 ft. (0.5 acre) per site One site every 2.5 miles	0.2 acre per mile	50 x 100 ft (0.1 acres) per site One site every 2.5 miles	0.05 acre per mile	100 x 200 ft. (0.5 acre) per site One site every 2.5 miles	0.2 acre per mile
Total Average Temporary Disturbance[3]	**6.2 acres per mile**		**8 acres per mile**		**2.1 acres per mile**		**3.7 acres per mile**	
	Permanent Disturbance							
Tower sites, including vegetation clearance within a 10-foot radius around base of towers in accordance with state law	60 X 60 ft (0.08 acres) ±5 towers per mile	0.2 acre per mile	45 x 50 ft. (0.05 acre) ±7 towers per mile	0.14 acre per mile	N/A	N/A	60 x 60 ft. (0.08 acre) ±5 towers per mile	0.2 acre per mile
Total Average Permanent Disturbance[4]	**0.2 acre per mile**		**0.14 acre per mile**		**N/A**		**0.2 acre per mile**	

Information based on LADWP and POWER Engineers, Inc. estimates. Actual disturbance areas may be smaller based on final engineering design.

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[1] For slopes over 10% (ground disturbance categories 4-6), site dimensions would be 200 x 250 ft. (1.2 acres) and have an average disturbance of 5.8 acres per mile.

[2] For slopes over 10% (ground disturbance categories 4-6), sites would be every 2 miles and have an average disturbance of 1.2 acres per mile.

[3] Access and spur road disturbances included in Table 1.

[4] Ibid.

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1.9 OPERATION OF TRANSMISSION LINES

The nominal voltage for the BRRTP transmission line would be 230 kV AC. There may be minor variations of up to five percent above the nominal level depending upon load flow.

1.9.1 Permitted Uses

After the transmission line has been energized, land uses that are compatible with safety regulations (such as agriculture and grazing) would be permitted in and adjacent to the right-of-way. Incompatible land uses within the right-of-way include construction and maintenance of inhabited dwellings, and any use requiring changes in surface elevation that would affect electrical clearances of existing or planned facilities.

Land uses on public lands that comply with local regulations would be permitted adjacent to or within the ROW, with require approval from the appropriate agency. Permission to use the ROW on private lands would have to be obtained from the utility owning the transmission line.

1.9.2 Safety

Safety is a primary concern in the design of this 230 kV transmission line. The AC transmission line would be protected with power circuit breakers and related line relay protection equipment. If conductor failure occurs, power would be automatically removed from the line. Lightning protection would be provided by overhead ground wires along the line. Electrical equipment and fencing at the switching station would be grounded. All fences, metal gates, pipelines, and other metal components that cross or are within the transmission line ROW would be grounded to prevent electrical shock. If applicable, grounding outside of the ROW may also occur.

1.10 MAINTENANCE OF TRANSMISSION LINES

The 230 kV transmission line would be inspected several times annually by both ground and air patrols. Maintenance would be performed as needed. When access is required for non-emergency maintenance and repairs, LADWP would adhere to the same precautions and procedures that were taken during the original construction.

Emergency maintenance would involve prompt movement of repair crews to repair or replace any damaged equipment or infrastructure. Crews would be instructed to protect crops, plants, wildlife, and other resources of significance. Restoration procedures following completion of repair work would be those prescribed for project implementation construction. The comfort and safety of local residents would be provided for by limiting noise, dust, and the danger caused by maintenance vehicle traffic. Details would be provided in the COM Plan and POD prior to line construction.

1.10.1 Vegetation Management

Vegetation management along the transmission line ROW would be required by the North American Reliability Council (NERC). In compliance with the NERC's Standard FAC-003-l, LADWP would prepare a Vegetation Management Plan for the BRRTP. The Vegetation Management Plan would be included in the COM Plan to be completed prior to the issuance of a Notice to Proceed from the USFS and BLM. Vegetation management would consist of routine tree trimming to maintain the required minimum 10-foot clearance from conductors to vegetation (California Public Resources Code [PRC] 4293); clearance of flammable brush vegetation within a 10-foot radius around the base of transmission line towers in accordance with California PRC 4292; and clearance immediately adjacent to access roads to permit adequate access to the facilities.

1.10.2 Access Road Maintenance

Ongoing access road maintenance would be conducted in accordance with existing or new road authorizations issued to LADWP. Access road maintenance consists of those activities necessary to allow continued access to the ROW and/or each tower structure. These activities may include grading, and maintenance of drainage systems, bridges, culverts, fences, gates and signs. Motor graders, backhoes, dump trucks and pickups are used to maintain access roads.

1.11 DECOMMISSIONING OF TRANSMISSION LINES

At the end of the useful life of the proposed Project, if the facility were no longer required, or if extension of the authorizations were not granted by federal land agencies at the time they expired, the transmission line would be abandoned. Subsequently, conductors, insulators and hardware would be dismantled and removed from the ROW. Tower structures would be removed and foundations broken off below ground surface.

If the line and associated ROW are abandoned at some future date, the ROW would be available for the same uses that existed prior to construction of the Project. Following abandonment and removal of the transmission line from the ROW, any areas disturbed to dismantle the line would be restored and rehabilitated as near as possible to their original condition.

2.0 ADDITION OF NEW 230 KV CIRCUIT

Between the proposed Haskell Canyon Switching Station and the existing Castaic Power Plant, LADWP proposes the addition of 12 miles of a new 230 kV transmission circuit onto existing Castaic – Olive 230 kV Transmission Line structures (towers 1-1 through 12-1). This new circuit would be called Castaic – Haskell Canyon #4 and would utilize the same conductor (2,156 kcmil “Bluebird” ACSS/AW) as that proposed for the new 230 kV transmission line between Barren Ridge and Haskell Canyon Switching Stations.

The addition of a new circuit on existing towers would require many of the same activities of a new transmission line (surveying of ROW, rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, and cleanup). However, all work would be within existing ROW and no new towers would be constructed. Some towers may need to be modified or reinforced to carry the additional weight of the new conductor. Specific towers requiring reinforcement would be determined following detailed design of the Project. Tower reinforcement would not alter the general design or the location of the structures. This process would generally include reinforced foundations or steel member replacements.

3.0 RECONDUCTORING

LADWP proposes the reconductoring of 76 miles of the existing BR-RIN 230 kV transmission line with larger conductors between the Barren Ridge Switching Station and Rinaldi Substation (towers 176-1 through 251-1). The existing conductors (954/ 2,312 kcmil) would be replaced with a new 1,433.6 kcmil “Merrimack” ACSS/TW/HS conductor. The new conductor would have a larger diameter that allows for greater electrical capacity.

The upgrade of the existing BR-RIN would also require many of the same activities of the new transmission line (surveying of ROW, rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, and cleanup). Removal of the existing conductor would be used to string a pulling line, and this line would then be used to pull in the new conductor. All work would remain within the existing 250-foot-wide ROW, with no additional ROW required. Some of the towers would need to be

modified, replaced, and/or have foundations reinforced or replaced to carry the additional weight of the new heavier conductor.

4.0 NEW HASKELL CANYON SWITCHING STATION

As a component of the BRRTP, LADWP proposes the construction of a new switching station in Haskell Canyon, south of the Angeles National Forest on LADWP-owned property at the convergence of several existing and proposed 230 kV transmission lines (the existing BR-RIN, the proposed double-circuit Barren Ridge-Haskell Canyon, existing Castaic-Northridge, Castaic-Sylmar, Castaic-Olive, and the proposed Castaic to Haskell Canyon).

The station would be approximately 500 feet by 600 feet to accommodate the necessary circuit positions, which are made up of equipment, such as steel support structures, circuit breakers, disconnect switches, and associated equipment, and a relay house and control house containing control and protective relaying equipment. The relay and control houses would each be approximately 30 feet long by 12 feet wide by 10 feet high and constructed of gray concrete block. The station yard would include a paved internal access road approximately 16 feet wide and would be enclosed by chain-link fencing with barbed-wire extension for security. Figure 6 illustrates the preliminary design layout for the station. Figure 7 illustrates the preliminary grading plan for the station.

Necessary pre-construction geotechnical investigation on-site would include six borings by a drill rig to investigate bedrock and soil stability and four cone penetration test locations after site grading to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

Construction of the new Haskell Canyon Switching Station would consist of preconstruction surveys, clearing and grading of access roads, site grading and drainage development, installation of concrete foundations and steel support structures, installation of below- and above-ground electrical conduits for equipment power and control, installation of below- and above-grade grounding conductors, and installation of control and relay houses. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks, and flatbed trailers. Cranes, man-lifts, portable welding units, line trucks, and mechanic trucks would also be required. Construction would require an estimated 12 months with approximately 60 workers.

Site preparation work for the station would involve clearing and grading of access roads, clearing of the switchyard site, the cut and fill grading of the site, and placement and compaction of structural fill that would serve as a base for switching station facilities. The site would be graded to maintain current drainage patterns as much as possible. A 16-foot wide paved road and 100-foot by 100-foot gravel parking area would be required. The yard would be covered with crushed-rock aggregate. Native vegetation would be re-established where possible outside the switchyard fence.

Following site grading and development, reinforced concrete foundations would be installed to support the steel structures and electrical equipment and control facilities. It is estimated that 1,500 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 180 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 120-day working period. Subsequent to the foundation installation, trenches would be dug to facilitate placement of copper conductors for the station grounding mat.

Multiple transmission lines would be terminated into the switching station (i.e., the new and existing Barren Ridge – Haskell and Castaic – Haskell Canyon transmission lines) and would need support and

require the installation of galvanized steel structures. An existing 115 kV transmission line may need to be relocated around the proposed station. High-voltage bus work consisting of aluminum jumpers and tubing would be installed within the station.

Figure 6. Haskell Canyon Switching Station Design Layout

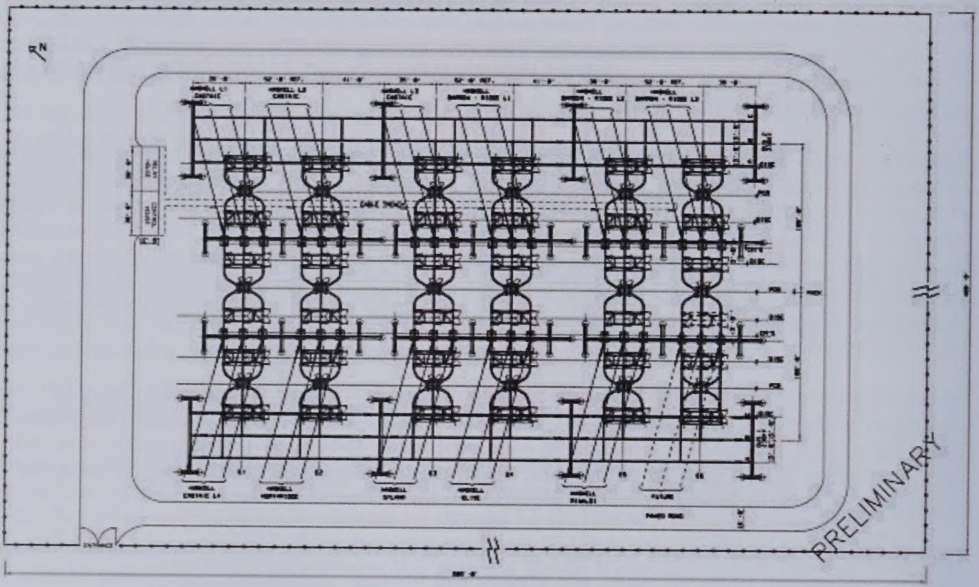
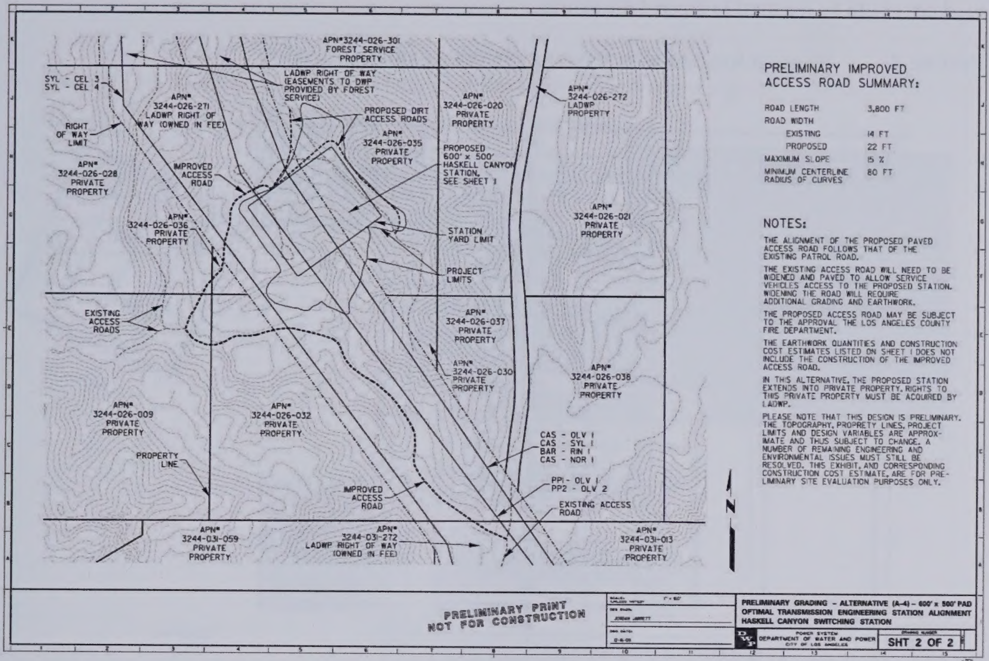


FIGURE 7. HASKELL CANYON GRADING PLAN


APN#3244-026-301
FOREST SERVICE
PROPERTY
LADWP RIGHT OF WAY
(EASEMENTS TO DWP
PROVIDED BY FOREST
SERVICE)
SYL - CEL 3
SYL - CEL 4
APN#
3244-026-271
LADWP RIGHT OF
WAY (OWNED IN FEE)
RIGHT
OF WAY
LIMIT
APN#
3244-026-028
PRIVATE
PROPERTY
IMPROVED
ACCESS
ROAD
PROPOSED DIRT
ACCESS ROADS
APN#
3244-026-035
PRIVATE
PROPERTY
APN#
3244-026-020
PRIVATE
PROPERTY
PROPOSED
600' x 500'
HASKELL CANYON
STATION,
SEE SHEET 1
APN#
3244-026-272
LADWP
PROPERTY
APN#
3244-026-036
PRIVATE
PROPERTY
STATION
YARD LIMIT
APN#
3244-026-021
PRIVATE
PROPERTY
PROJECT
LIMITS
EXISTING
ACCESS
ROADS
APN#
3244-026-037
PRIVATE
PROPERTY
APN#
3244-026-030
PRIVATE
PROPERTY
APN#
3244-026-038
PRIVATE
PROPERTY
APN#
3244-026-009
PRIVATE
PROPERTY
APN#
3244-026-032
PRIVATE
PROPERTY
CAS - OLV 1
CAS - SYL 1
BAR - RIN 1
CAS - NOR 1
PROPERTY
LINE
PP1 - OLV 1
PP2 - OLV 2
IMPROVED
ACCESS
ROAD
EXISTING ACCESS
ROAD
APN#
3244-031-059
PRIVATE
PROPERTY
APN#
3244-031-272
LADWP RIGHT OF WAY
(OWNED IN FEE)
APN#
3244-031-013
PRIVATE
PROPERTY
N
PRELIMINARY IMPROVED
ACCESS ROAD SUMMARY:
ROAD LENGTH 3,800 FT
ROAD WIDTH
EXISTING 14 FT
PROPOSED 22 FT
MAXIMUM SLOPE 15 %
MINIMUM CENTERLINE RADIUS OF CURVES 80 FT
NOTES:
THE ALIGNMENT OF THE PROPOSED PAVED ACCESS ROAD FOLLOWS THAT OF THE EXISTING PATROL ROAD.
THE EXISTING ACCESS ROAD WILL NEED TO BE WIDENED AND PAVED TO ALLOW SERVICE VEHICLES ACCESS TO THE PROPOSED STATION. WIDENING THE ROAD WILL REQUIRE ADDITIONAL GRADING AND EARTHWORK.
THE PROPOSED ACCESS ROAD MAY BE SUBJECT TO THE APPROVAL THE LOS ANGELES COUNTY FIRE DEPARTMENT.
THE EARTHWORK QUANTITIES AND CONSTRUCTION COST ESTIMATES LISTED ON SHEET 1 DOES NOT INCLUDE THE CONSTRUCTION OF THE IMPROVED ACCESS ROAD.
IN THIS ALTERNATIVE, THE PROPOSED STATION EXTENDS INTO PRIVATE PROPERTY. RIGHTS TO THIS PRIVATE PROPERTY MUST BE ACQUIRED BY LADWP.
PLEASE NOTE THAT THIS DESIGN IS PRELIMINARY. THE TOPOGRAPHY, PROPRETY LINES, PROJECT LIMITS AND DESIGN VARIABLES ARE APPROXIMATE AND THUS SUBJECT TO CHANGE. A NUMBER OF REMAINING ENGINEERING AND ENVIRONMENTAL ISSUES MUST STILL BE RESOLVED. THIS EXHIBIT, AND CORRESPONDING CONSTRUCTION COST ESTIMATE, ARE FOR PRELIMINARY SITE EVALUATION PURPOSES ONLY.
PRELIMINARY PRINT
NOT FOR CONSTRUCTION
JORDAN JARRETT
PRELIMINARY GRADING - ALTERNATIVE (A-4) - 600' x 500' PAD
OPTIMAL TRANSMISSION ENGINEERING STATION ALIGNMENT
HASKELL CANYON SWITCHING STATION
POWER SYSTEM
DEPARTMENT OF WATER AND POWER
CITY OF LOS ANGELES
SHT 2 OF 2

5.0 EXPANSION OF BARREN RIDGE SWITCHING STATION

LADWP proposes expansion of the existing Barren Ridge Switching Station to the east side by 235 feet by 500 feet, for a total station size of 485 feet by 500 feet (approximately 5.6 acres). The expansion area of the station would include electrical structures and equipment for the addition of transmission lines, a material staging area, roadway within the station, and drainage area. Figure 8 illustrates the preliminary design layout for the station.

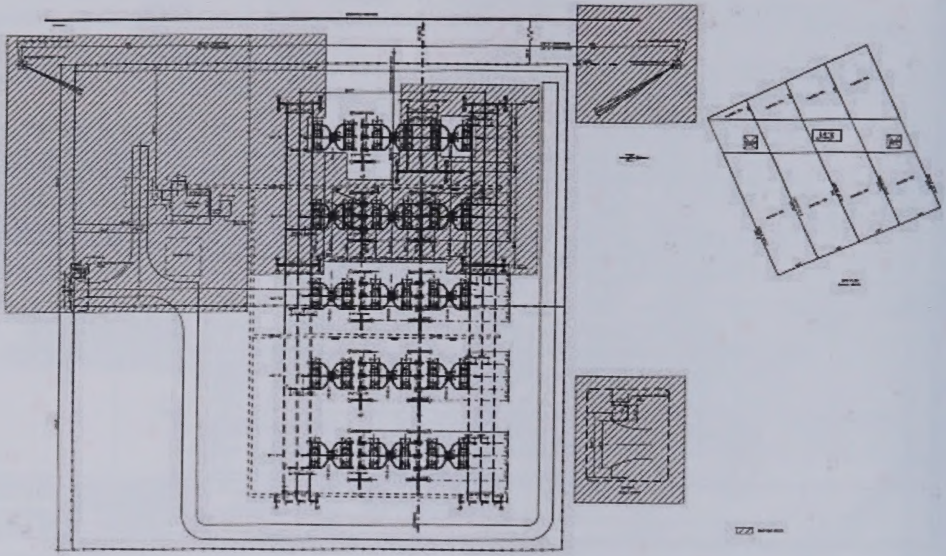
Expansion of the existing switching station would be very similar to the construction of the Haskell Canyon Switching Station as described above. Expansion would consist of preconstruction surveys, site preparation and grading, installation of reinforced concrete foundations, installation of electrical conduits for equipment power and control, and installation of structures and equipment.

Necessary pre-construction geotechnical on-site investigation would include two test pits excavated by a backhoe to investigate soil density and settlement, and four cone penetration test locations on-site to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

It is estimated that 700 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 80 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 90-day working period. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks and flatbed trailers. Cranes, man-lifts, portable welding units, line

trucks, and mechanic trucks would also be required. An estimated 8 months with approximately 60 workers would be required to expand the station.

FIGURE 8. BARREN RIDGE SWITCHING STATION EXPANSION LAYOUT



ANF Water Resources

June 2011

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
Water Resources and Hydrology Supplemental Technical Report

PROJECT NUMBER:
122708

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Water Resources and Hydrology Supplemental Technical Report for the Angeles National Forest

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TABLE OF CONTENTS

1.0 INTRODUCTION 1
2.0 PURPOSE AND SCOPE 2
2.1 Issues 2
3.0 BACKGROUND 3
3.1 General Description 3
4.0 AFFECTED ENVIRONMENT 7
4.1 Water Resource Inventory 10
4.2 Watersheds 10
4.2.1. Liebre Gulch-Piru Creek Watershed (HUC 180701020509) 10
4.2.2. Upper Castaic Creek Watershed (HUC 180701020303) 11
4.2.3. Fish Creek-Piru Creek Watershed (HUC 180701020602) 11
4.2.4. Lake Piru-Piru Creek Watershed (HUC 180701020603) 12
4.2.5. Lower Castaic Creek Watershed (HUC 180701020306) 13
4.2.6. San Francisquito Canyon Watershed (HUC 180701020402) 13
4.2.7. Lower Bouquet Canyon Watershed (HUC 180701020202) 14
4.2.8. Elizabeth Lake Watershed (HUC 180701020301) 15
4.2.9. Elizabeth Lake Canyon Watershed (HUC 180701020304) 15
4.2.10. Agua Dulce Canyon Watershed (HUC 180701020104) 16
4.2.11. Mint Canyon Watershed (HUC 180701020106) 17
4.2.12. Upper Bouquet Canyon Watershed (HUC 180701020201) 17
5.0 GUIDING LAWS, REGULATIONS, POLICIES, AND DIRECTION 19
6.0 MANAGEMENT OBJECTIVES (DESIRED CONDITIONS) 21
7.0 IMPACT ASSESSMENT METHODOLOGY 22
7.1 Impact Model 22
7.1.1. RUSLE Analysis 22
7.1.2. Hydrologic Modeling 22
7.2 Resource Sensitivity 23
7.2.1. Sensitivity Values 23
7.2.2. Access Levels and Ground Disturbance 24
7.3 Impact Levels 24
7.4 Impact Assessment Methodology by Project Component 25
7.4.1. 230 kV Transmission Line 25
7.4.2. New 230 kV Circuit 25
7.4.3. Reconductoring 26
7.4.4. New Haskell Canyon Switching Station 26
7.4.5. Expansion of Barren Ridge Switching Station 26
7.5 Impacts and Mitigation Planning 26
7.5.1. Types of Impacts 37
8.0 IMPACT RESULTS 40
8.1 Alternative 1 40
8.2 Alternative 2 40
8.3 Alternative 2a 41
8.4 Alternative 3 42
8.5 No Action Alternative 42
9.0 CUMULATIVE WATERSHED EFFECTS 43
9.1 Introduction 43

9.2 Impact Area 43
9.3 Present and Reasonably Foreseeable Actions 43
9.3.1. Transmission Projects 43
9.3.2. Transportation and Public Facilities 44
9.3.3. Maintenance and Landscape Management Projects 44
9.3.4. Local Projects 45
9.4 Cumulative Effects Analysis 45
9.4.1. Direct and Indirect Effects Summary 45
9.4.2. Cumulative Effects Evaluation 46
10.0 REFERENCES 47
APPENDIX A: RUSLE ANALYSIS 48
APPENDIX B: STUDIED WATERSHED MAPS 49
APPENDIX C: ASSUMPTIONS AND RESULTS 50

TABLES

Table 1. Watersheds in the BRRTP Area. 7
Table 2. Condition Categories for Watersheds in the USFS Pacific Southwest Region 8
Table 3. Water Resources Impacts by Access Level Category 24
Table 4. General Practices 28
Table 5. Specifically Recommended Mitigation Measures 31

1.0 INTRODUCTION

The City of Los Angeles Department of Water and Power (LADWP) is proposing the Barren Ridge Renewable Transmission Project (BRRTP or Project) to access clean, renewable resources in the Tehachapi Mountains and Mojave Desert areas, and to improve reliability and upgrade transmission capacity.

LADWP, the US Department of Agriculture, Forest Service (USFS or Forest Service) and the U.S Department of the Interior, Bureau of Land Management (BLM) are preparing a joint Environmental Impact Statement (EIS) / Environmental Impact Report (EIR) for the proposed BRRTP. LADWP is the California Environmental Quality Act (CEQA) Lead Agency, while the USFS and BLM are the federal Co-Lead Agencies under the National Environmental Policy Act (NEPA). An EIS/EIR is an informational disclosure document used to inform agency decision makers and the public of the potential significant environmental effects of a project, identify possible ways to eliminate or minimize the potential significant effects, and describe reasonable alternatives to the Proposed Action /Project.

The purpose of the water resources and hydrology study is to inventory existing water resources and assess the potential impacts to water resources of each of the proposed transmission line alternative corridors, proposed switching station, and expansion of the existing switching station. The water resource environmental analysis will:

- present the regulatory framework
- provide an overview of the technical methodology used in collecting baseline conditions and evaluating impacts
- examine the affected environment within the study corridors and vicinity, where appropriate
- describe the potential impacts on water resources resulting from construction and operation of the Project
- evaluate the level of potential impacts based upon National Environmental Policy Act (NEPA)/California Environmental Quality Act (CEQA) criteria
- present specifically recommended mitigation measures to minimize potential impacts.

Portions of the BRRTP Alternatives would traverse the western section of the Angeles National Forest (ANF or Forest), and have the potential to adversely affect the watersheds through which they cross. Adverse effects may result from vegetation clearance and general ground disturbance during construction of the Project, as well as leaks or spills of oils or other hazardous fluids from construction and maintenance vehicles or equipment. Specifically, Forest watersheds could be adversely affected by sedimentation and erosion resulting from construction activities. This report contains an inventory of water resources within affected Forest watersheds, and evaluates the potential for Project-related erosion and related changes in hydrology. Potential adverse effects are analyzed for each BRRTP Alternative.

2.0 PURPOSE AND SCOPE

The purpose of this report is to identify water resources potentially affected by the Alternatives of the BRRTP, and to analyze effects of construction and operation of the Project on erosion and sedimentation. The scope of this report is limited to those portions of each BRRTP Alternative that would be located within the Angeles National Forest.

This report is supplemental to the complete Water Resources Technical Report, and has been prepared at the request of Mr. Paul Gregory, ANF Hydrologist.

2.1 ISSUES

This report will focus on identifying and analyzing BRRTP effects on water resources within HUC 12 (6th Level) watersheds. In addition to analyzing potential effects on existing water resources, Mr. Gregory requested a Revised Universal Soil Loss Equation (RUSLE) analysis (Appendix A of this report) to predict the rate of erosion that would potentially result from construction of the BRRTP within the Forest. Mr. Gregory also requested a statistical analysis of 6th level watersheds within the ANF that would be affected by the BRRTP Alternatives, to predict peak flow within the watersheds pre- and post-construction.

3.0 BACKGROUND

3.1 GENERAL DESCRIPTION

The BRRTP would be located within the western section of the Angeles National Forest, in the Santa Clara/Mojave Rivers Ranger District. The Project area includes 16 HUC 12 6th level watersheds, 12 of which would be affected by BRRTP Alternatives, as described in this report. These affected watersheds are Liebre Gulch-Piru Creek, Upper Castaic Creek, Fish Creek-Piru Creek, Lake Piru-Piru Creek, Lower Castaic Creek, Elizabeth Lake, Elizabeth Lake Canyon, San Francisquito Canyon, Lower Bouquet Canyon, Agua Dulce Canyon, Mint Canyon, and Upper Bouquet Canyon (Figure 1).

The BRRTP is located in portions of Township 05N Range 16W Sections 20, 21, 22, 25, 26, and 27; Township 05N Range 17W Section 4; Township 06N Range 17W Sections 6, 7, 8, 17, 20, 21, 28, 33, and 34; Township 07N Range 17W Sections 19, 30, and 31; Township 07N Range 18W Sections 2, 11, 12, 13, and 24; and Township 08N Range 18W Section 35, in Los Angeles County, California.

Land Use Zones have been designated within the ANF to identify appropriate uses that are consistent with the Forest Land Management Plan (USFS 2005). Some Zones have restrictions that may affect projects proposed within them.

One Wild and Scenic River, and one eligible Wild and Scenic River are within the Project area. Piru Creek, a designated Wild and Scenic River, is located approximately two miles west of Alternative 1. San Francisquito Canyon Creek, which is eligible for Wild and Scenic River designation, is located in the center of the Project area, and is generally paralleled by Alternatives 2 and 2a.

Three Critical Biological Areas occur in the Project area. One is located in San Francisquito Canyon, and is designated Critical Habitat for the California red-legged frog (*Rana draytonii*). The remaining two Critical Biological Areas are located in Castaic Creek and Fish Creek, and host Critical Habitat for the arroyo toad (*Anaxyrus californicus*).

Riparian Conservation Areas (RCAs) combine the ecologic concerns of riparian ecosystems with the hydrologic concerns of floodplains and streamside slopes. RCAs have been established within the Angeles National Forest to protect, maintain, or improve water quality, site productivity, channel stability, riparian vegetation, and riparian-dependent species and habitats. RCAs are associated with many streams within the Forest, including West Fork Liebre Gulch, Liebre Gulch, San Francisquito Canyon, Dry Canyon, Bee Canyon, Pettinger Canyon, Munz Canyon, Mint Canyon, and multiple unnamed streams.

The Project area is located in the Transverse Ranges Geomorphic Province, which is characterized by east-west trending mountain ranges and fault systems. The province is bounded on the northeast by the San Andreas Fault, and extends west and south from the study area. The Project area is underlain by Tertiary and pre-Tertiary rock formations, with the exception of canyon bottoms and other drainage areas comprised of alluvium. Soil erosion along the BRRTP Alternatives ranges from Slight to Very Severe.

The climate of the BRRTP area is Mediterranean, with warm, dry summers and cool, wet winters. Most precipitation occurs between November and March, when storm systems from the north Pacific approach the area from the west or southwest, often producing precipitation simultaneously throughout the area. The orographic effect often results in intense precipitation along and within the San Gabriel Mountains. Annual precipitation averages 14.32 inches at Elizabeth Lake, with much falling as snow; in the higher elevations, precipitation averages up to 40 inches, with over 95% falling as snow. Maximum daily temperatures vary with elevation, but range from the 90s during the summer months to the 30s during the winter months (Western Regional Climate Center 2011).

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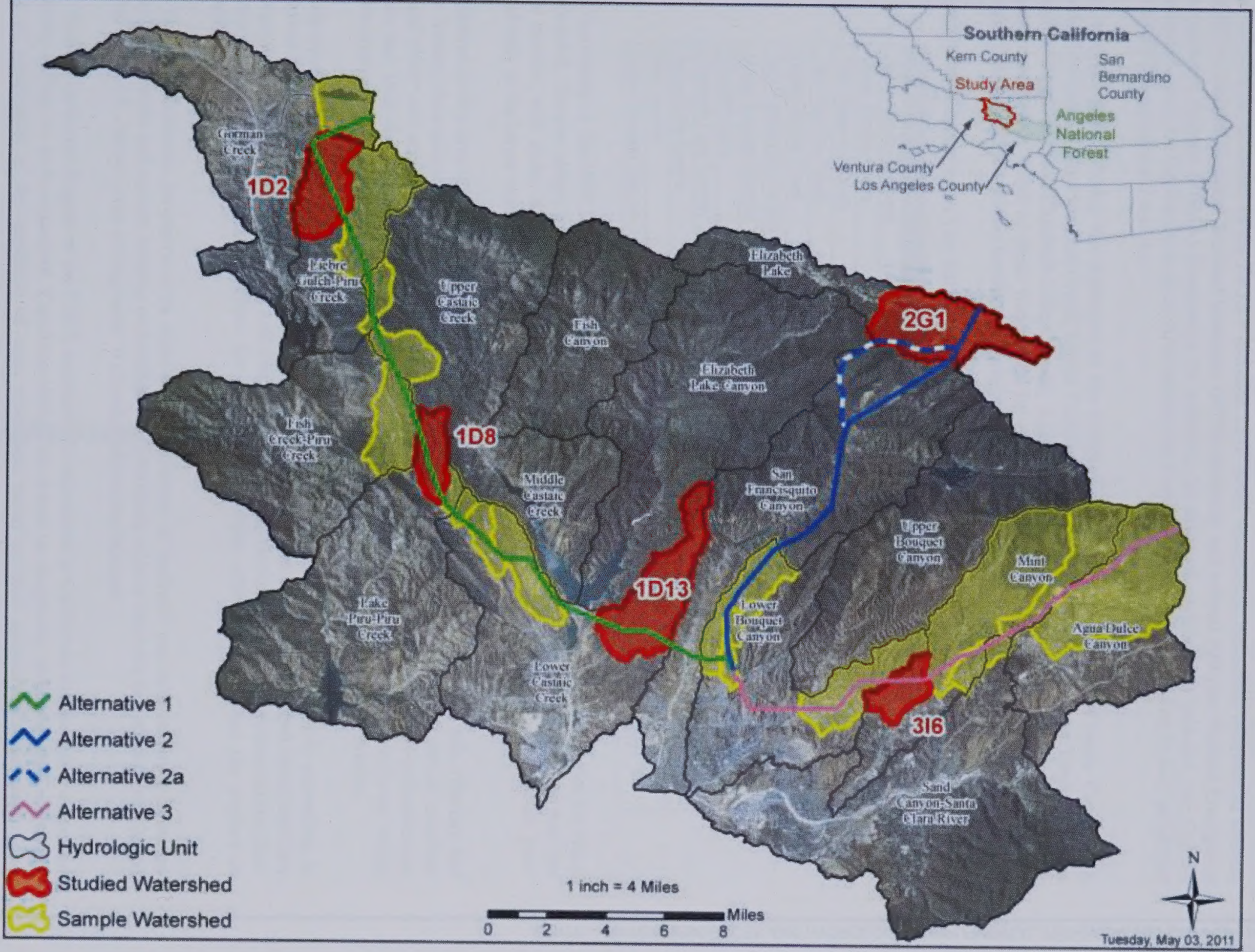
FIGURE 1. STUDY WATERSHED AND ASSOCIATED HYDROLOGIC UNITS


Southern California
Kern County
San Bernardino County
Study Area
Angeles National Forest
Ventura County
Los Angeles County
Gorman Creek
1D2
Liebre Gulch-Piru Creek
Upper Castaic Creek
Fish Canyon
Elizabeth Lake
2G1
Elizabeth Lake Canyon
Fish Creek-Piru Creek
1D8
Middle Castaic Creek
San Francisquito Canyon
Upper Bouquet Canyon
Mint Canyon
1D13
Lower Bouquet Canyon
Lake Piru-Piru Creek
Agua Dulce Canyon
Lower Castaic Creek
316
Sand Canyon-Santa Clara River
Alternative 1
Alternative 2
Alternative 2a
Alternative 3
Hydrologic Unit
Studied Watershed
Sample Watershed
1 inch = 4 Miles
0
2
4
6
8
Miles
N
Tuesday, May 03, 2011

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4.0 AFFECTED ENVIRONMENT

The affected environment of the BRRTP includes 12 6th level watersheds, numerous intermittent streams and RCAs, several National Wetland Inventory (NWI) wetlands, and several 100-year Federal Emergency Management Agency (FEMA) floodplains. In addition, the affected environment includes one Critical Biological Area; the Critical Biological Area within San Francisquito Canyon would be closely paralleled by BRRTP Alternatives 2 and 2a.

The affected area includes the drainages in the Liebre Gulch-Piru Creek, Upper Castaic Creek, Fish Creek-Piru Creek, Lake Piru-Piru Creek, Lower Castaic Creek, San Francisquito Canyon, Lower Bouquet Canyon, Elizabeth Lake, Elizabeth Lake Canyon, Agua Dulce Canyon, Mint Canyon, and Upper Bouquet Canyon watersheds. Most of these watersheds lie entirely within the ANF, Santa Clara/Mojave Rivers Ranger District. Table 1 shows names and acreages of these watersheds.

TABLE 1. WATERSHEDS IN THE BRRTP AREA.

Watershed	Watershed Number	Watershed Acreage
Liebre Gulch-Piru Creek	180701020509	14,139
Upper Castaic Creek	180701020303	24,063
Fish Creek-Piru Creek	180701020602	25,781
Lake Piru-Piru Creek	180701020603	34,246
Lower Castaic Creek	180701020306	30,296
San Francisquito Canyon	180701020402	31,695
Lower Bouquet Canyon	180701020202	22,075
Elizabeth Lake	180701020301	11,411
Elizabeth Lake Canyon	180701020304	34,504
Agua Dulce Canyon	180701020104	18,814
Mint Canyon	180701020106	18,664
Upper Bouquet Canyon	180701020201	24,517

The mountains in the BRRTP area generally range from steep to very steep, with summits that are sharp or rounded. Steeper slopes are often barren of vegetations and show evidence of erosion. Canyons are often narrow, with steep, rocky sides and littered with many rocks and boulders. Water is present year-round only in the larger streams, such as San Francisquito Canyon (USFS 2005).

Vegetation in this area is dominated by mixed chaparral series with a sparse mixture of oak, riparian, and pine forests, decreasing in density in the lower elevations. Dense areas of chaparral provide excellent ground cover and serve to stabilize slopes, minimize soil erosion, peak storm flows, and sedimentation within and from the watersheds. A layer of forest duff and organic litter provide ground cover which slows stormwater runoff on slopes, protects soils from erosion, and assists with water infiltration.

Floodplains in the Project area tend to be contained within the walls of the drainages, only expanding in the lower reaches near the stream outlet. Heavy storms may scour the stream channel and floodplain bare of vegetation, leaving behind disturbed soil conditions that are prime for colonization by non-native plant species that compete with native plants for groundwater, which often occurs nearer the surface in floodplains.

The National Wetlands Inventory maps approximate locations of wetlands one acre or larger based on aerial photographs and remote sensing techniques. NWI wetlands may or may not be jurisdictional based on the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual.

The Pacific Southwest Region of the USFS analyzed all watersheds in California and assigned watershed condition ratings to each watershed. Condition ratings are based on diagnostic indicators that ultimately yield an assessment of the condition of each watershed based on their geomorphic, hydrologic, and biological integrity relative to their natural condition, as judged by Forest Service geologists, hydrologists, and biologists (USFS 2000). Ratings and their descriptions are shown in Table 2 below.

TABLE 2. CONDITION CATEGORIES FOR WATERSHEDS IN THE USFS PACIFIC SOUTHWEST REGION.

Category	Description
Category Condition I	Watersheds that are currently exhibiting high geomorphic, hydrologic, and biotic integrity relative to their natural potential condition and exhibit a stable drainage network. Physical and biological conditions suggest that aquatic and riparian systems are predominantly functional in terms of supporting dependent species and beneficial uses of water. The risks of management induced disturbance have not been expressed or resulted in significant alteration of geomorphic, hydrologic, and biotic processes.
Category Condition II	Watersheds that are currently exhibiting moderate geomorphic, hydrologic, and biotic integrity relative to its natural potential condition and portions of these watersheds exhibit an unstable drainage network. Physical and biological conditions suggest that aquatic and riparian systems are at risk in being able to support dependent species and retain beneficial uses of water. The risks of management induced disturbance are variable and effects have partially been expressed or have resulted in localized alteration of geomorphic, hydrologic, and biotic processes.
Category Condition III	Watersheds that are currently exhibiting low geomorphic, hydrologic, and biotic integrity relative to their natural potential condition and a majority of the drainage network is unstable. Physical and biological conditions suggest that riparian and aquatic systems do not support dependent species nor beneficial uses of water. The risks of management induced disturbance are high; they have been fully expressed and/or have resulted in deterioration of geomorphic, hydrologic, and/or biotic processes.

The California State Water Resources Control Board (SWRCB) requires individual Regional Water Quality Control Boards (RWQCBs) to develop Basin Plans (water quality control plans) designed to preserve and enhance water quality and protect the beneficial uses of all Regional waters. Specifically, Basin Plans designate beneficial uses for surface waters and groundwater, set narrative and numerical objectives that must be attainted or maintained to protect the designated beneficial uses and conform to the States antidegradation policy, and describe implementation programs to protect all waters in the Regions. In addition, Basin Plans incorporate by reference all applicable State and Regional Board plans and policies, and other pertinent water quality policies and regulations. Within the ANF, the BRRTP is under the jurisdiction of the Basin Plan of the Los Angeles Regional Water Quality Control Board.

Section 303(d) unites the water quality management strategies of the federal Clean Water Act (CWA). Section 303(d) requires that states make a list of waters that exceed the minimum level of pollutants put in place by the CWA. For waters on this list the states must develop total maximum daily loads (TMDLs), which account for all sources of the pollutants that caused the water to be listed. The TMDLs must account for contributions from both point sources and nonpoint sources, as defined by Section 402 of the CWA. In California, the SWRCB has interpreted state law to require that implementation of TMDLs be addressed when incorporated into Basin Plans (water quality control plans).

Within the ANF, the BRRTP Alternatives would cross two groundwater basins and one sub-basin. These basins are described in California's Groundwater Bulletin 118 and summarized below.

- **Antelope Valley Groundwater Basin (Groundwater Basin Number 6-44).** The Antelope Valley Groundwater Basin drains a surface area of approximately 1,010,000 acres (1,580 square miles). The basin underlies an extensive alluvial valley in the western Mojave Desert, and is bounded on the northwest by the Garlock fault zone at the base of the Tehachapi Mountains, on the southwest by the San Andreas fault zone at the northern base of the San Gabriel Mountains, on the east by ridges, buttes, and low hills that form a surface and groundwater drainage divide, and on the north by the Fremont Groundwater Basin described above.

  The primary aquifers in this basin are unconsolidated alluvial and lacustrine deposits from the Pleistocene and Holocene, forming an upper aquifer and a lower aquifer. The upper aquifer is the primary source of groundwater in the Antelope Valley, and is generally unconfined. The basin comprises three large sediment-filled structural sub-basins separated by extensively faulted, elevated bedrock. Numerous faults displace the water table and impede groundwater flow within the basin.

Total storage capacity of the Antelope Valley Groundwater Basin is between 68,000,000 and 70,000,000 af, except for an area of the basin where the groundwater is between 20 and 220 feet in depth. In that area, the storage capacity is approximately 5,400,000 af. Between 1975 and 1998, groundwater in this basin ranged from an increase of 84 feet to a decrease of 66 feet. The area of the basin that experienced a decrease in groundwater depth is along the State Route 14 corridor from Palmdale to Rosamond. In the vicinity of the study corridors that cross the Antelope Valley Groundwater Basin, recent depth-to-water measurements in USGS wells ranged between 152.83 feet and 390.79 feet (DWR 2003).

- **Acton Valley Groundwater Basin (Groundwater Basin Number 4-5).** The Acton Valley Groundwater Basin drains a surface area of approximately 8,270 acres (12.9 square miles). The basin is unconfined, and groundwater is found in alluvium and stream terrace deposits. The basin is bounded by the Sierra Pelona on the north, and the San Gabriel Mountains on the south, east, and west.

  Groundwater in the basin is unconfined. The water-bearing formations in this basin are Holocene alluvial deposits and Pleistocene stream terrace deposits. The alluvial deposits reach a maximum thickness of approximately 225 feet in the Santa Clara River channel near the community of Acton, and thin out east and west of this area. The stream terrace deposits are found on low-lying flanks of the foothills and upper reaches of the tributaries of the Santa Clara River, and reach a maximum thickness of approximately 210 feet north of Acton.

  Total storage capacity of the Acton Valley Groundwater Basin is approximately 40,000 af. Groundwater levels declined from the 1950s through the mid-1970s; groundwater levels increased from the late 1970s through the mid-1980s, but began declining again. Current depth-to-water measurements were unavailable for the Acton Valley Groundwater Basin (DWR 2003).

- **Santa Clara River Valley East Sub-basin (Groundwater Basin Number 4-4.07).** The Santa Clara River Valley East Sub-basin drains a surface area of approximately 66,200 acres (103 square miles). The basin is bounded on the north by the Piru Mountains, on the west by impervious rocks of the Modelo and Saugus Formations and a constriction in the alluvium, on the south by the Santa Susana Mountains and the San Gabriel Mountains, and on the east by the San Gabriel Mountains.

  Groundwater in the sub-basin is found in Holocene alluvium, Pleistocene terrace deposits, and in the late Pliocene to early Pleistocene Saugus Formation. Groundwater is generally unconfined in the alluvium, but may be confined, semi-confined, or unconfined in the Saugus Formation. Alluvium deposits reach a maximum thickness of approximately 240 feet below the Santa Clara River channel and thin laterally away from the channel, and east and west of the community of Acton. The terrace deposits generally lie above the water table, and are found on the low-lying flanks of the foothills and upper reaches of the Santa Clara River tributaries. These deposits reach thicknesses of up to 200 feet near Saugus, Agua Dulce, and Acton. The Saugus Formation is up to 8,500 feet thick, and is not widely utilized as a groundwater source for municipal and agricultural uses, as the water can be brackish. The maximum depth to the base of fresh water ranges from 1,500 feet northeast of the San Gabriel Fault to 5,500 feet between the San Gabriel Fault and the Holser Fault.

Although the Saugus Formation is displaced by both the San Gabriel and Holser Faults, groundwater movement in the Formation has not been affected. The water-bearing alluvial deposits have not been affected by fault displacement.

Total storage capacity of the sub-basin is approximately 240,000 af in the alluvial aquifer, and approximately 1,650 af in the Saugus Formation. Between 1970 and 2000, groundwater levels were relatively stable with depth-to-water levels in the alluvial aquifer measuring from between approximately 13 feet to 37 feet in the western portion of the sub-basin, 10 feet to 50 feet in the central portion, and 15 feet to 100 feet in the eastern portions of the sub-basin. In the Saugus Formation, depth-to-water levels have also remained stable. In the vicinity of the study corridors adjacent to the Santa Clara River Valley East Sub-basin, recent depth-to-water measurements in USGS wells ranged between 9.60 feet and 10.20 feet (DWR 2003).

4.1 WATER RESOURCE INVENTORY

The goal of the water resource inventory was to identify, map, describe, and document existing water resources within the affected watersheds of each BRRTP Alternative. Detailed data inventories were compiled to facilitate the assessment of potential water resource effects resulting from construction and operation of the Project.

Initially, base maps of the Project area were prepared at a scale of 1:12,000. Water resource data collected from federal and state databases were reviewed, refined, and updated. Existing maps from the United States Geological Survey (USGS), National Wetland Inventory (NWI), and Federal Emergency Management Agency (FEMA) were collected and included in the inventory, as appropriate. These data were compiled and mapped utilizing a geographic information system (GIS).

The study used National Agriculture Imagery Program (NAIP) 2005 color aerial photography, and national, state, and local agency GIS data layers to identify and more accurately assess surface land uses and land cover types.

A description of water resources was divided by affected watershed. Existing water resources were identified within the Alternative study corridor to present an overview of the water resources that would potentially be affected by the transmission line alternatives.

4.2 WATERSHEDS

4.2.1. Liebre Gulch-Piru Creek Watershed (HUC 180701020509)

The Liebre Gulch-Piru Creek Watershed is located in the Castaic Unit of the ANF, and has a Summary Watershed Condition Category rating of I. This watershed drains approximately 14,139 acres; drainages in this watershed include those in West Fork Liebre Gulch, Liebre Gulch, and Posey Canyon, all of which drain into Pyramid Lake. Pyramid Lake and the southernmost reach of West Fork Liebre Gulch have associated FEMA 100-year floodplains.

The NWI has mapped two wetlands within this watershed: Pyramid Lake has been mapped as a lacustrine wetland (L1UB); and a small 0.4-mile portion of West Fork Liebre Gulch immediately north of Interstate 5 has been mapped as Other Wetland.

Within the ANF, many of the larger drainages and their tributaries have associated RCAs; in the ANF portion of the Liebre Gulch-Piru Creek Watershed, there are approximately 39 RCAs.

Beneficial uses of surface waters in this watershed include Municipal and Domestic Supply, Industrial Service Supply, Industrial Process Supply, Agricultural Supply, Ground Water Recharge, Freshwater Replenishment, Hydropower Generation, Water Contact Recreation, Non-contact Water Recreation, Warm Freshwater Habitat, Cold Freshwater Habitat, Wildlife Habitat, Rare, Threatened, or Endangered Species, Spawning, Reproduction, and/or Early Development, and Wetland Habitat.

The Liebre Gulch-Piru Creek Watershed does not lie above a defined groundwater basin.

BRRTP Alternative 1 would cross the ANF section of the Liebre Gulch-Piru Creek Watershed from mile marker 58.1 to 62.9, at mile marker 64.2, and from mile marker 64.6 to 64.8. Ground slope in the vicinity of Alternative 1 typically ranges from 20 percent to 30 percent; however, in many areas, slope is greater than 30 percent.

4.2.2. Upper Castaic Creek Watershed (HUC 180701020303)

The Upper Castaic Creek Watershed is located in the San Francisquito Unit of the ANF, and has a Summary Watershed Condition Category rating of III. This watershed drains approximately 24,063 acres; drainages within this watershed include those in Trough Canyon, Cold Canyon, Cienega Canyon, Pine Canyon, Bear Canyon, and Redrock Canyon, as well as Falls Creek, Castaic Creek, and Salt Creek. FEMA has not mapped 100-year floodplains associated with these drainages.

Palustrine forested (PFO) wetlands, palustrine scrub-shrub (PSS) wetlands, and "other" wetlands have been mapped by the NWI in and adjacent to Cienega Canyon (T07N R17W Sections 15, 22, and 27). Additional PFO wetlands are mapped in Section 14 NW, in Section 12 SW at the northern end of Bear Canyon, and in Section 10 SW.

There is a Critical Biological Area located in Castaic Creek that contains designated Critical Habitat for arroyo toad.

Much of Castaic Creek and many of its tributaries have associated RCAs. In the Upper Castaic Creek Watershed there are approximately 55 RCAs.

Beneficial uses of surface waters in this watershed include Municipal and Domestic Supply, Industrial Service Supply, Industrial Process Supply, Agricultural Supply, Ground Water Recharge, Freshwater Replenishment, Water Contact Recreation, Non-contact Water Recreation, Commercial and Sport Fishing, Warm Freshwater Habitat, Wildlife Habitat, and Rare, Threatened, or Endangered Species.

The southern portion of the Upper Castaic Creek Watershed lies above the Santa Clara River Valley East Groundwater Sub-basin.

BRRTP Alternative 1 would cross through the ANF section of the Upper Castaic Creek Watershed from mile marker 62.7 to 64.2, and from mile marker 64.6 to 66.5. Ground slope in the vicinity typically ranges from 20 percent to 30 percent, with many slopes adjacent to Alternative 1 greater than 30 percent.

4.2.3. Fish Creek-Piru Creek Watershed (HUC 180701020602)

The Fish Creek-Piru Creek Watershed is located in the Upper Piru Unit of the ANF, and has a Summary Watershed Condition Category rating of II. This watershed drains approximately 25,781 acres; drainages within this watershed include those in Cherry Canyon, Osito Canyon, Turtle Canyon, Ruby Canyon, and Oak Flats, as well as Piru Creek, North Fork Fish Creek, Fish Creek, and Michael Creek. FEMA has mapped 100-year floodplains associated with Piru Creek from Pyramid Dam to the border of the Los Padres National Forest, a distance of approximately 3.5 miles. Piru Creek is a designated Wild and Scenic River, from 0.5 mile south of Pyramid Dam to the Los Angeles-Ventura Counties border, a distance of 7.5 miles.

The NWI has mapped a number of wetlands within the Fish Creek-Piru Creek watershed, many of which are associated with Piru Creek, which is itself designated a riverine upper perennial (R3) wetland. Other

NWI wetlands associated with Piru Creek are PFO and PSS wetlands. Additional NWI wetlands are located near Halfway Spring Campsite, Cobblestone Springs, both of which are in the Los Padres National Forest. In the ANF, the NWI has mapped a PFO wetland near Oak Flat Spring in T06N R17W Section 19NW.

Fish Creek, Piru Creek, and many of their tributaries have associated RCAs. In the ANF portion of the Fish Creek-Piru Creek Watershed, there are approximately 26 RCAs.

Beneficial uses of surface waters in this watershed include Municipal and Domestic Supply, Industrial Service Supply, Industrial Process Supply, Agricultural Supply, Ground Water Recharge, Freshwater Replenishment, Water Contact Recreation, Non-contact Water Recreation, Warm Freshwater Habitat, Cold Freshwater Habitat, Wildlife Habitat, Rare, Threatened, or Endangered Species, Spawning, Reproduction, and/or Early Development, and Wetland Habitat.

Piru Creek is listed on the 2006 CWA Section 303(d) List of Water Quality Limited Segments Requiring TMDLs as impaired by unhealthy chloride and pH levels.

The Fish Creek-Piru Creek Watershed does not lie above a defined groundwater basin.

BRRTP Alternative 1 would cross through the ANF section of the Fish Creek-Piru Creek Watershed from mile marker 66.0 to 68.5. Ground slope in the vicinity typically ranges from 20 percent to 30 percent, with many slopes adjacent to Alternative 1 greater than 30 percent.

4.2.4. Lake Piru-Piru Creek Watershed (HUC 180701020603)

The Lake Piru-Piru Creek Watershed is located in the Upper Piru Unit of the ANF, and has a Summary Watershed Condition Category rating of II. This watershed drains approximately 34,246 acres; drainages in this watershed include those in Big Oak Flat, Canton Canyon, Santa Felicia Canyon, Devil Canyon, Sharps Canyon, Oak Canyon, Lechler Canyon, Dominguez Canyon, Maple Canyon, and Reasoner Canyon, all of which drain into Lake Piru, which is located on the southern border of the watershed. Only Lake Piru has an associated FEMA 100-year floodplain.

The NWI has mapped the lower reaches of Canton Canyon as an intermittent riverine (R4) wetland. As in the Fish Creek-Piru Creek Watershed, Piru Creek is designated an R3 wetland, with associated PFO and PSS wetlands. The NWI has designated stretches of Reasoner Canyon and Dominguez Canyon as Riparian Forests. A palustrine emergent (PEM) wetland is mapped on the western edge of Lake Piru, below the confluence of the Reasoner Canyon and Dominguez Canyon drainages. Lechter, Santa Felicia, and Devil Canyons have associated PFO wetlands, and the NWI has also mapped a PSS wetland in an unnamed tributary to Santa Felicia Canyon, approximately 0.7 mile east of the Los Angeles-Ventura Counties line.

The drainages in Canton Canyon, Big Oak Flat, and many of their tributaries have associated RCAs. In the ANF portion of the Lake Piru-Piru Creek Watershed, there are approximately 24 RCAs.

Beneficial uses of surface waters in this watershed include Municipal and Domestic Supply, Industrial Service Supply, Industrial Process Supply, Agricultural Supply, Ground Water Recharge, Freshwater Replenishment, Hydropower Generation, Water Contact Recreation, Non-contact Water Recreation, Commercial and Sport Fishing, Warm Freshwater Habitat, Cold Freshwater Habitat, Wildlife Habitat, Rare, Threatened, or Endangered Species, and Spawning, Reproduction, and/or Early Development.

The southeastern portion of the Lake Piru-Piru Creek Watershed lies above the Santa Clara River Valley East Groundwater Sub-basin.

BRRTP Alternative 1 would cross the ANF section of the Lake Piru-Piru Creek Watershed from mile marker 68.3 to 71.5. Ground slope in the vicinity typically ranges from 20 percent to 30 percent, with some slopes greater than 30 percent.

4.2.5. Lower Castaic Creek Watershed (HUC 180701020306)

The Lower Castaic Creek Watershed is located in the San Francisquito Unit of the ANF, and has a Summary Watershed Condition Category rating of III. This watershed drains approximately 30,296 acres; drainages in this watershed include those in Grasshopper Canyon, Marple Canyon, Violin Canyon, Bitter Canyon, Charlie Canyon, Tapia Canyon, Wayside Canyon, Hasley Canyon, and Romero Canyon, as well as Castaic Creek. FEMA has mapped 100-year floodplains associated with Castaic Creek below Castaic Dam, Hasley Canyon, Marple Canyon, Charlie Canyon, and several additional tributaries to Castaic Creek.

The NWI has mapped PFO wetlands in Tapia Canyon (T05N R16W Sections 21SW and 31NE), and PSS wetlands in Wayside Canyon (T04N R16W S32E). In Castaic Creek, the NWI has mapped PFO, PEM, and PSS wetlands along the banks of the creek in the vicinity of Castaic Junction. Additional PFO wetlands have been mapped in Sloan Canyon (T05N R17W Section 34NE).

In this watershed, Charlie Canyon, Bitter Canyon, and many of their tributaries have associated RCAs. In the ANF portion of the Lower Castaic Creek Watershed, there are approximately 13 RCAs.

Beneficial uses of surface waters in this watershed include Municipal and Domestic Supply, Industrial Service Supply, Industrial Process Supply, Agricultural Supply, Ground Water Recharge, Freshwater Replenishment, Hydropower Generation, Water Contact Recreation, Non-contact Water Recreation, Commercial and Sport Fishing, Warm Freshwater Habitat, Cold Freshwater Habitat, Wildlife Habitat, Rare, Threatened, or Endangered Species, and Spawning, Reproduction, and/or Early Development.

The southern portion of the Lower Castaic Creek Watershed lies above the Santa Clara River Valley East Groundwater Sub-basin.

BRRTP Alternative 1 would cross the ANF section of the Lower Castaic Creek Watershed from mile marker 71.5 to 80.3. Ground slope in the vicinity typically ranges from 20 percent to 30 percent, with slopes in some areas greater than 30 percent.

4.2.6. San Francisquito Canyon Watershed (HUC 180701020402)

The San Francisquito Canyon Watershed is located in the Elizabeth Unit of the ANF, and has a Summary Watershed Condition Category rating of I. This watershed drains an area of approximately 31,695 acres; drainages in this watershed include those in San Francisquito Canyon, South Portal Canyon, Dowd Canyon, Clearwater Canyon, Cherry Canyon, Bee Canyon, and Drinkwater Canyon. FEMA has mapped 100-year floodplains in San Francisquito Canyon, and in the lower reach of Bee Canyon.

The NWI has mapped a PFO wetland in San Francisquito Canyon in T05N R15W Section 6 and T05N R16W Section 1. San Francisquito Canyon creek is designated an R4 wetland. In the lower reach of San Francisquito Canyon creek, PEM wetlands have been mapped near the confluence with the Santa Clara River.

San Francisquito Canyon and many of its tributaries have associated RCAs. In the ANF portion of the San Francisquito Canyon Watershed, there are approximately 56 RCAs.

Beneficial uses of surface waters in this watershed include Municipal and Domestic Supply, Industrial Service Supply, Industrial Process Supply, Agricultural Supply, Ground Water Recharge, Freshwater Replenishment, Water Contact Recreation, Non-contact Water Recreation, Commercial and Sport

Fishing, Warm Freshwater Habitat, Wildlife Habitat, Rare, Threatened, or Endangered Species, Spawning, Reproduction, and/or Early Development, and Wetland Habitat.

The southern portion of the San Francisquito Canyon Watershed lies above the Santa Clara River Valley East Groundwater Sub-basin.

There is a Critical Biological Area within San Francisquito Canyon that is designated Critical Habitat for the California red-legged frog. In addition to the California red-legged frog, arroyo chub (*Gila orcutti*) and Santa Ana sucker (*Catostomus santaanae*) have been recorded in San Francisquito Canyon, immediately downstream of the PFO wetland. Unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*) was previously known to occupy San Francisquito Canyon, but is now believed to be extirpated following heavy flood events in 2005 (CDFG 2011).

BRRTP Alternative 1 would cross the ANF section of the San Francisquito Canyon Watershed from mile marker 81.4 to 81.7. Ground slope in this vicinity ranges from flat to slopes greater than 30 percent. BRRTP Alternatives 2 and 2a would cross this watershed from mile marker 46.4 to 55.8, most of which would be within the ANF. Ground slope in the vicinity of these Alternatives is generally between 20 percent and 30 percent, with areas of slopes greater than 30 percent. The Alternative 2a re-route (Green Valley Re-route) would also cross this watershed from mile marker 3.6 to 6.6; this stretch would be entirely within the ANF. Ground slope in the vicinity of this re-route are generally greater than 30 percent, with a few areas of lesser slope ranging from 10 percent to 20 percent.

4.2.7. Lower Bouquet Canyon Watershed (HUC 180701020202)

The Lower Bouquet Canyon Watershed is located in the Bouquet Unit of the ANF, and has a Summary Watershed Condition Category rating of III. This watershed drains an area of approximately 22,075 acres; drainages in this watershed include those in Haskell Canyon, Bouquet Canyon, Vasquez Canyon, Plum Canyon, Dry Canyon, and Pettinger Canyon. FEMA has mapped 100-year floodplains for Bouquet Canyon, Vasquez Canyon, Plum Canyon, Haskell Canyon, and Dry Canyon.

The NWI has mapped PFO wetlands in areas of Dry Canyon, Haskell Canyon, and Bouquet Canyon. In Bouquet Canyon, Vasquez Canyon, and Plum Canyon, the NWI has also mapped PSS wetlands (T05N R15W Section 34NE, T04N R15W Sections 6S and 9NW). The NWI has designated each of these drainages R4 wetlands.

Haskell Canyon, Pettinger Canyon, and many of their tributaries have associated RCAs. In the ANF portion of the Lower Bouquet Canyon Watershed, there are approximately 20 RCAs.

Beneficial uses of surface waters in this watershed include Municipal and Domestic Supply, Industrial Service Supply, Industrial Process Supply, Agricultural Supply, Ground Water Recharge, Freshwater Replenishment, Water Contact Recreation, Non-contact Water Recreation, Commercial and Sport Fishing, Warm Freshwater Habitat, Cold Freshwater Habitat, Wildlife Habitat, Rare, Threatened, or Endangered Species, Spawning, Reproduction, and/or Early Development, and Wetland Habitat.

Dry Canyon Creek is listed on the 2006 CWA Section 303(d) List of Water Quality Limited Segments Requiring TMDLs as impaired by high levels of fecal coliform.

The southern portion of the Lower Bouquet Canyon Watershed lies above the Santa Clara River Valley East Groundwater Sub-basin.

There are multiple known instances of unarmored threespine stickleback within Bouquet Creek south of the ANF boundary (CDFG 2011).

BRRTP Alternative 1 would cross the ANF section of the Lower Bouquet Canyon Watershed from mile marker 81.7 to 83.2. In the vicinity of this Alternative, ground slope is greater than 30 percent. This watershed would also be crossed by BRRTP Alternatives 2 and 2a from mile marker 55.9 to 60.7, all of which is located in the ANF. In the vicinity of these Alternatives, ground slope is typically between 20 percent and 30 percent, interspersed with areas of slopes less than 20 percent and slopes greater than 30 percent.

4.2.8. Elizabeth Lake Watershed (HUC 180701020301)

The Elizabeth Lake Watershed is located in the San Francisquito Unit of the ANF and has a Summary Watershed Condition Category rating of III. This watershed drains an area of approximately 11,411 acres; drainages in this watershed include those in Shake Canyon, Pine Canyon, Sterner Canyon, Forsythe Canyon, Spring Canyon, Abrams Canyon, Lucky Canyon, Munz Canyon, and Burns Canyon, all of which drain into Lake Hughes, Munz Lake, or Elizabeth Lake. FEMA 100-year floodplains have been mapped in Pine Canyon upstream from Lake Hughes, for Lake Hughes and Elizabeth Lake, and for the unnamed drainage east of Elizabeth Lake.

The NWI has mapped PFO and PEM wetlands from north of Lake Hughes (T07N R15W Section 22SE) to south of Elizabeth Lake, near Power Line Drive (T06N R14W Section 2NW). Near the eastern edge of Elizabeth Lake is a palustrine aquatic bed (PAB) wetland; in addition, Munz Lake has been designated a PAB wetland by the NWI. Hughes Lake and Lake Elizabeth have been designated L1UB wetlands. Lake Hughes, Munz Lake, and Elizabeth Lake are rift lakes, which are formed in depressions created where active or recent strike/slip fault movement has impounded drainage.

Pine Canyon and many of its tributaries have associated RCAs. In the ANF portion of the Elizabeth Lake Watershed, there are approximately 17 RCAs.

Beneficial uses of surface waters in this watershed include Municipal and Domestic Supply, Industrial Service Supply, Industrial Process Supply, Agricultural Supply, Ground Water Recharge, Freshwater Replenishment, Water Contact Recreation, Non-contact Water Recreation, Commercial and Sport Fishing, Warm Freshwater Habitat, Wildlife Habitat, and Rare, Threatened, or Endangered Species.

The Elizabeth Lake Watershed lies above the San Andreas Rift Zone portion of the Antelope Valley Groundwater Basin.

Elizabeth Lake is listed on the 2006 CWA Section 303(d) List of Water Quality Limited Segments Requiring TMDLs as impaired by eutrophication, organic enrichment/low dissolved oxygen, unhealthy levels of pH, and trash. Lake Hughes is listed as impaired by algae, eutrophication, fish kills, odor, and trash; Munz Lake is listed as impaired by eutrophication and trash.

BRRTP Alternatives 2 and 2a would cross the ANF section of the Elizabeth Lake Watershed from mile markers 46.0 to 46.4. Ground slope in the vicinity of these Alternatives ranges from 0 percent to 30 percent. The Alternative 2a re-route (Green Valley Re-route) would also cross the ANF section of this watershed from mile marker 0.7 to 3.0. Ground slope in the vicinity of this portion of Alternative 2a is generally greater than 30 percent, with areas of lesser slope ranging from 10 percent to 30 percent.

4.2.9. Elizabeth Lake Canyon Watershed (HUC 180701020304)

The Elizabeth Lake Canyon Watershed is located in the San Francisquito Unit of the ANF, and has a Summary Watershed Condition Category rating of III. This watershed drains an area of approximately 11,411 acres; drainages in this watershed include those in Elizabeth Lake Canyon, Kleine Canyon, Prospect Canyon, Turkey Canyon, Deer Canyon, Hiatt Canyon, Tule Canyon, South Tule Canyon, Ruby Canyon, Dry Gulch, and Warm Springs Canyon, as well as Fish Creek. FEMA has mapped 100-year floodplains in the northern portion of Elizabeth Lake Canyon and along the edges of the east branch of Castaic Lake.

The NWI has mapped a relatively large PFO wetland in the northern end of Elizabeth Lake Canyon (T07N R15W Section 27). Smaller PSS wetlands are mapped along the northeastern branch of Castaic Lake (T05N R16W Section 5NE), and small, isolated PFO wetlands are mapped along the west slopes of Elizabeth Lake Canyon at the 2,800-foot level and the 3,000-foot level, and north of Turkey Canyon between 3,400 feet and 4,000 feet. The NWI has designated Castaic Lake a L1UB wetland.

Elizabeth Lake Canyon and many of its tributaries have associated RCAs. In the ANF portion of the Elizabeth Lake Canyon Watershed, there are approximately 63 RCAs.

Beneficial uses of surface waters in this watershed include Municipal and Domestic Supply, Industrial Service Supply, Industrial Process Supply, Agricultural Supply, Ground Water Recharge, Freshwater Replenishment, Water Contact Recreation, Non-contact Water Recreation, Commercial and Sport Fishing, Warm Freshwater Habitat, and Wildlife Habitat.

The southern portion of the Elizabeth Lake Canyon Watershed lies above the Santa Clara River Valley East Groundwater Sub-basin.

The BRRTP Alternative 2a re-route (Green Valley Re-route) would cross the ANF section of the Elizabeth Lake Canyon Watershed from mile marker 3.0 to 3.6. Ground slope in the vicinity of this portion of the re-route are from 20 percent to greater than 30 percent.

4.2.10. Agua Dulce Canyon Watershed (HUC 180701020104)

The Agua Dulce Canyon Watershed is located in the Soledad (Aliso) Unit of the ANF, and has a Summary Watershed Condition Category rating of III. This watershed drains an area of approximately 18,814 acres; drainages in this watershed include those in Letteau Canyon, Willow Springs Canyon, Hauser Canyon, Agua Dulce Canyon, Santa Margarita Canyon, and Escondido Canyon. FEMA has mapped 100-year floodplains in the Sierra Pelona Valley from the confluence of the Agua Dulce, Hauser, and Letteau Canyon drainages south to Soledad Canyon.

The NWI has mapped small, isolated PFO wetlands in Letteau Canyon (T05N R13W Section 6), Escondido Canyon (T04N R14W Section 2NW, T05N R14W Sections 35NE and 36NE, and T05N R13W Section 30SW), and Agua Dulce Canyon (T04N R14W Section 3SE). PSS wetlands are mapped adjacent to the PFO wetlands in these canyons.

No RCAs have been identified in the ANF portion of the Agua Dulce Canyon Watershed.

Beneficial uses of surface waters in this watershed include Municipal and Domestic Supply, Industrial Service Supply, Industrial Process Supply, Agricultural Supply, Ground Water Recharge, Freshwater Replenishment, Water Contact Recreation, Non-contact Water Recreation, Commercial and Sport Fishing, Warm Freshwater Habitat, Wildlife Habitat, Rare, Threatened, or Endangered Species, and Wetland Habitat.

The Agua Dulce Canyon Watershed lies above the Acton Valley Groundwater Basin.

BRRTP Alternative 3 would cross through the ANF section of the Agua Dulce Canyon Watershed from mile marker 60.3 to 61.9. Ground slope in the vicinity of this Alternative typically ranges from 20 percent to 30 percent.

4.2.11. Mint Canyon Watershed (HUC 180701020106)

The Mint Canyon Watershed is located in the Soledad (Aliso) Unit of the ANF, and has a Summary Watershed Condition Category rating of III. This watershed drains an area of approximately 18,664 acres; drainages in this watershed include those in Mint Canyon, Spade Spring Canyon, Spade Canyon, Rowler Canyon, and Rush Canyon. FEMA has mapped 100-year floodplains for Mint Canyon, Spade Spring Canyon, and two tributaries (T04N R15W Section 2NE).

The NWI has mapped isolated PFO wetlands in Fryingpan Springs (T06N R13W Section 31SE). The drainages in Mint Canyon and Spade Spring Canyon are designated R4 wetlands.

Mint Canyon, Rowler Canyon, Spade Spring Canyon, and many of their tributaries have associated RCAs. In the ANF portion of the Mint Canyon Watershed, there are approximately 24 RCAs.

Beneficial uses of surfaces waters in this watershed include Municipal and Domestic Supply, Industrial Service Supply, Industrial Process Supply, Agricultural Supply, Ground Water Recharge, Freshwater Replenishment, Water Contact Recreation, Non-contact Water Recreation, Commercial and Sport Fishing, Warm Freshwater Habitat, and Wildlife Habitat.

Mint Canyon Creek is listed on the 2006 CWA Section 303(d) List of Water Quality Limited Segments Requiring TMDLs as impaired by high levels of nitrate and nitrite.

The northeast portion of the Mint Canyon Watershed lies above the Acton Valley Groundwater Basin and the southern portion of this watershed lies above the Santa Clara River Valley East Groundwater Sub-basin.

BRRTP Alternative 3 would cross through the ANF section of the Mint Canyon Watershed from mile marker 62.0 to 69.0. In the vicinity of this Alternative, ground slope is typically greater than 30 percent, with some areas with slopes between 20 percent and 30 percent.

4.2.12. Upper Bouquet Canyon Watershed (HUC 180701020201)

The Upper Bouquet Canyon Watershed is in the Bouquet Unit of the ANF, and has a Summary Watershed Condition Category rating of III. This watershed drains an area of approximately 24,517 acres; drainages in this watershed include those in Spunky Canyon, Bouquet Canyon, Martindale Canyon, Texas Canyon, Fall Canyon, Mystic Canyon, and Course Gold Canyon. Bouquet Reservoir is located in the northern portion of this watershed. FEMA has mapped 100-year floodplains for Bouquet Reservoir, and the lower reaches of Bouquet Canyon and Texas Canyon.

The NWI has mapped PSS and PFO wetlands in Bouquet Canyon just east of Bouquet Reservoir, and a PSS wetland on the western edge of the reservoir. The reservoir is designated an L1UB wetland. In Bouquet Canyon, near the confluence with the Texas Canyon drainage, the NWI has mapped PEM and PFO wetlands (T05N R15W Sections 21 and 28). The drainages in Bouquet Canyon, Texas Canyon, and several tributaries to bouquet Canyon are designated R4 wetlands.

Bouquet Canyon, Texas Canyon, and many of their tributaries have associated RCAs. In the ANF portion of the Upper Bouquet Canyon Watershed, there are approximately 46 RCAs.

Beneficial uses of surface waters in this watershed include Municipal and Domestic Supply Industrial Service Supply, Industrial Process Supply, Agricultural Supply, Ground Water Recharge, Freshwater Replenishment, Hydropower Generation, Water Contact Recreation, Non-contact Water Recreation, Commercial and Sport Fishing, Warm Freshwater Habitat, Cold Freshwater Habitat, Wildlife Habitat, Rare, Threatened, or Endangered Species, Spawning, Reproduction, and/or Early Development, and Wetland Habitat.

The southern portion of the Upper Bouquet Canyon Watershed lies above the Santa Clara River Valley East groundwater Sub-basin.

There are multiple known instances of unarmored threespine stickleback within Bouquet Creek south of Bouquet Reservoir to Texas Canyon (Hitchcock et al. 2006).

BRRTP Alternative 3 would cross through the ANF section of the Upper Bouquet Canyon Watershed from mile marker 69.1 to 70.1. In the vicinity of this Alternative, ground slope is typically greater than 30 percent.

5.0 GUIDING LAWS, REGULATIONS, POLICIES, AND DIRECTION

The proposed Project must comply with the following laws, regulations, and policies:

Angeles National Forest Land Management Plan. The United States Forest Service (USFS) developed a Land Management Plan (USFS 2005) for the Angeles National Forest (Forest), which provides management direction for activities within the Forest. The Plan includes a description of Program Strategies and Tactics geared toward achieving the desired goals of the Plan. Strategies associated with water resources include Watershed Function, Water Management, and Hazardous Materials.

Forest Service Handbook, Angeles National Forest. The Forest Service Soil and Water Conservation Practices Handbook (FSH 2509.22; USFS 2005) sets forth guidance for the delineation and management of Riparian Conservation Areas on the Angeles National Forest. This handbook is supplemental to the 2005 Angeles National Forest Land Management Plan.

Water Quality Management Best Management Practices. The USFS Pacific Southwest Region developed guidance for the practices, procedures, and Best Management Practices (BMPs) used for water quality management on USFS lands within the State of California. The BMPs described in this document are in conformance and compliance with the provisions and requirements of Sections 208 and 319 of the Clean Water Act (CWA), and are also within the guidelines of the Basin Plans developed by the nine California Regional Water Quality Control Boards.

Section 303(d) Clean Water Act. Section 303(d) unites the water quality management strategies of the CWA. Section 303(d) requires that states make a list of waters that exceed the minimum level of pollutants put in place by the CWA. For waters on this list, the states must develop total maximum daily loads (TMDLs), which account for all sources of the pollutants that caused the water to be listed. The TMDLs must account for contributions from both point sources and non-point sources, as defined by Section 402 of the CWA. In California, the State Water Resources Control Board (SWRCB) has interpreted state law to require that implementation of TMDLs be addressed when incorporated into Basin Plans (water quality control plans).

Section 401 Clean Water Act. Pursuant to Section 401 of the CWA, a water quality certification is required from the California Regional Water Quality Control Board (RWQCB) for Section 404 permit activities in individual Regions. The RWQCB certifies that the discharge complies with state water quality standards and ensures that there is no net loss of wetlands through impact avoidance, minimization, and mitigation. The ANF portion of the proposed Project is located in the jurisdiction of the Los Angeles RWCQB.

Section 404 Clean Water Act. Waters of the U.S. including wetlands are subject to U. S. Army Corps of Engineers (USACE) jurisdiction under Section 404 of the Clean Water Act CWA. A Section 404 permit is required for the discharge of dredged or fill material into Waters of the U.S. The Los Angeles District of the USACE would provide review and permitting services for this Project.

Wild and Scenic Rivers Act. The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 *et seq.*) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. The Act is notable for safeguarding the special character of these rivers, while also recognizing the potential for their appropriate use and development. Designated segments need not include the entire river, and may include tributaries.

Basin Plan. The California State Water Resources Control Board (SWRCB) requires individual RWQCBs to develop Basin Plans (water quality control plans) designed to preserve and enhance water quality and protect the beneficial uses of all Regional waters. Specifically, Basin Plans designate beneficial uses for surface waters and groundwater, set narrative and numerical objectives that must be attainted or maintained to protect the designated beneficial uses and conform to the States antidegradation policy, and describe implementation programs to protect all waters in the Regions. In addition, Basin Plans incorporate by reference all applicable State and Regional Board plans and policies, and other pertinent water quality policies and regulations. The ANF portion of the BRRTP is under the jurisdiction of the Basin Plan of the Los Angeles RWQCB.

Construction Storm Water Program. The SWRCB and the nine RWQCBs implement water quality regulations under the federal CWA and California Porter Cologne Water Quality Control Act. Existing water quality regulations require compliance with the National Pollutant Discharge Elimination System (NPDES) for discharges of storm water runoff associated with a construction activity.

Dischargers whose projects disturb one or more acres of soil are required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit, 2009-2009-DWQ). Construction activity subject to this permit includes clearing, grading, and disturbances to the ground such as stockpiling or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility.

The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP should contain a site map(s) which shows the construction site perimeter, existing and proposed buildings, lots, roadways, storm water collection and discharge points, general topography both before and after construction, and drainage patterns across the Project. The SWPPP must list Best Management Practices (BMPs) the discharger will use to protect storm water runoff and the placement of those BMPs. Additionally, the SWPPP must contain a visual monitoring program, a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs, and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment.

A complete Notice of Intent Package, including SWPPP, and Notice of Termination must be uploaded to the SWRCB Storm Water Multiple Application and Report Tracking System (SMARTS) database by the Project Owner.

6.0 MANAGEMENT OBJECTIVES (DESIRED CONDITIONS)

Forest Goal 5.1 requires sustaining high water quality throughout Forest watersheds, streams, wetlands, and other water resources; Forest Goal 5.2 resolves to maintain and improve riparian conditions so that RCAs will contain primarily native botanical and wildlife species. Specifically, desired conditions within the BRRTP area includes improvement of habitat conditions for threatened, endangered, proposed, and candidate species (*e.g.*, arroyo toad and California red-legged frog), and reduction and control of exotic species. Achievement of these conditions requires management of water quality and water needs to provide for forest ecosystem needs and in-stream flows necessary to support surface and subsurface resources (USFS 2005).

7.0 IMPACT ASSESSMENT METHODOLOGY

Initial impact levels of each Alternative were evaluated by combining resource sensitivity and access level category (*i.e.*, level of impact expected from ground disturbance). All known water resources within the study corridors of each segment were inventoried and evaluated to determine potential impacts resulting from the Project.

Impacts to inventoried water resources were evaluated considering the following factors:
1. Construction, operation, and maintenance-related impacts;
2. Occurrence of affected water resources;
3. Water resource sensitivity levels;
4. Access level category (level of impact expected from ground disturbance);
5. BMPs or mitigation measures to reduce initial impact levels.

7.1 IMPACT MODEL

To determine the intensity of Project-related impacts, an impact model was developed for water resources. The impact assessment model combines resource sensitivity and access levels. The combination of these assessment variables determined the level of impact (high, moderate, low). The results of the impact assessment are presented in detail in Section 8.0 of this report.

Once initial impacts levels were established for each segment, BMPs or specific measures for mitigating or reducing predicted high- or moderate-level impacts were applied. Residual impacts are the impacts remaining after application of these measures.

7.1.1. RUSLE Analysis

Initial analysis of Project-related impacts revealed the potential for impacts to water quality through erosion of disturbed soils, leading to increased sedimentation and turbidity of receiving waters within the Angeles National Forest. At the request of the USFS, POWER Engineers, Inc. prepared a watershed analysis to predict erosion rates (tons/acre/year) that would potentially result from construction of the alternative transmission line routes in the Angeles National Forest. This analysis allows for the comparison of potential impacts on sensitive aquatic habitat and species, and beneficial uses of waters from construction of the alternative routes within the Angeles National Forest. The RUSLE Analysis is included in Appendix A of this report.

7.1.2. Hydrologic Modeling

To determine what effect, if any, Project-related ground disturbance would have on watersheds within the Forest, a range of subwatersheds were modeled using the hydrologic modeling program WinTR-55. Due to the comparatively large size of the 6th level watersheds, a relative approach was utilized to determine effects of BRRTP Alternatives on watershed hydrology. Rather than delineating and modeling all 6th level watersheds in the BRRTP area, a representative sample of smaller subwatersheds was selected, in collaboration with Mr. Gregory, to provide a representative sample of the varied characteristic of the area watersheds. If little or no change were determined in these subwatersheds, then it could be logically assumed that similar percentages of change (*i.e.*, post-construction changes from baseline) would occur in similar subwatersheds with similar Project-related impacts. If, however, the model produced significant differences between pre- and post-construction conditions, modeling of the remaining subwatersheds would be required to quantify impacts.

Of the 12 watersheds that would be affected by BRRTP Alternatives, five sample subwatersheds were selected with acreages that fell within the limitations of the WinTR-55 program. Each of the sample subwatersheds are situated in different locales, are of varying sizes, and each BRRTP Alternative is represented (for maps of sample subwatersheds, please refer to Appendix B, Studied Watersheds).

Model Input

A brief summary of model inputs are outlined below. For a more detailed description of the model inputs and any associated assumptions, please refer to Appendix C.

- Storm Data
    - 24-Hour Design Storm Data obtained from NOAA Precipitation Frequency Data Server website at http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=ca
- Time of Concentration
    - Delineated using GIS for each subwatershed
    - Assumed 100 feet of sheet and shallow concentrated flow, followed by channel flow
- Land Use
    - Utilized National Land Use Cover Datasets (NLCD) in GIS format and cover type was converted as described in the Assumptions Table to fit WinTR-55 input requirements
    - For post-construction conditions, pre-construction conditions were modified by "burning in" access roads. This was the only variable modified to reflect pre- and post-construction conditions.
    - Access roads were conservatively assumed to be impervious, and 10 meters (32.8 feet) wide (typical dirt and gravel access roads are pervious and less than 5 meters wide).

7.2 RESOURCE SENSITIVITY

Resource sensitivity is the measure of the probable adverse effect that a resource would experience through direct or indirect impacts associated with construction, operation, and maintenance of the Project. Adverse effects to water resources were assessed using three major criteria: the susceptibility of the resource to the potential changes resulting from construction, operation, and maintenance activities; significance of the potential change on the resource; and occurrence or abundance of affected water resources within the study area. Also considered were hydrological capacity, accessory benefits (e.g., plant and wildlife habitat), and potential to affect engineering and design.

Determination of Potential Change. Changes are brought about by construction of the Project, the physical presence and operation of the Project facilities, and management and maintenance of the Project facilities. This potential for change is predicted by evaluating environmental conditions, the Project description, and implementation specifications.

Significance of Changes. The effect of potential changes on resources is described in levels of significance. The significance of any change relates to the immediate- and long-term effects that the change may have, either directly or indirectly, on the resource. Accordingly, a sensitivity value of maximum, moderate, or minimal was assigned to each resource to represent the potential level of significance.

7.2.1. Sensitivity Values

Sensitivity values are based on the function and value of the resource, and the level of impacts or adverse effect to that resource. For example, Palustrine Forested (PFO) wetlands are designated at a maximum sensitivity level because they provide high functional values and would be permanently impacted by clearing, ROW maintenance, and filling for access road construction.

A **maximum** sensitivity value was assigned to:

- Areas with occurrences of perennial rivers or streams, including Lower Perennial Riverine (R2) wetlands;
- Palustrine Emergent (PEM), Palustrine Scrub-Shrub (PSS), or PFO wetlands;
- Riparian Conservation Areas.

A **moderate** sensitivity value was assigned to:

- 100-year floodplains;

- Intermittent rivers and streams, including Intermittent Riverine (R4) wetlands;
- Partially hydric soils.

A **minimal** sensitivity value was assigned to:

- Palustrine Unconsolidated Bottom (PUB) wetlands;
- Aqueducts;
- Wells and groundwater.

Lands not associated with a water resource feature or indicator were not considered sensitive.

7.2.2. Access Levels and Ground Disturbance

The criteria for assessing the initial ground disturbance impacts to water resources are summarized in Table 3. Access level categories and resource sensitivity levels were the main factors used in estimating potential impact levels.

TABLE 3. WATER RESOURCES IMPACTS BY ACCESS LEVEL CATEGORY

Resource		Access Level Categories						
		1	2	3	4	5	6	H
Perennial river or stream		Low	Low	Moderate	High	High	High	High
Intermittent river or stream		Low	Low	Moderate	Moderate	High	High	High
Aqueduct		Low	Low	Moderate	High	High	High	High
Wells		Low	Low	Low	Low	Low	Low	Low
Riparian habitat and RCAs		Low	Moderate	High	High	High	High	High
SEAs		Low	Low	Moderate	Moderate	High	High	High
NWI wetland	PEM	Low	Moderate	High	High	High	High	High
	PFO	Low	Moderate	High	High	High	High	High
	PUB	Low	Low	Moderate	Moderate	High	High	High
	R2	Low	Low	Moderate	High	High	High	High
	R4	Low	Low	Moderate	Moderate	High	High	High
Partially hydric soils		Low	Low	Moderate	Moderate	High	High	Moderate
100-year floodplain		Low	Low	Moderate	Moderate	High	High	Moderate

7.3 IMPACT LEVELS

Water resource impact determinations are based on significance criteria derived from CEQA Guidelines (Appendix G, Environmental Checklist Form, Section IX). Impacts are considered significant if the Project:

- Violates any water quality standards or waste discharge requirements, creates new sources of polluted runoff, or otherwise substantially degrades water quality.
- Substantially depletes groundwater supplies or interferes substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).
- Substantially alters the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.

- Substantially alters the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increases the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.
- Creates or contributes runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provides substantial additional sources of polluted runoff.
- Has a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- Places housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- Places within a 100-year flood hazard area structures which would impede or redirect flood flows.
- Exposes people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
- Results in or is subject to damage from inundation by seiche, tsunami, or mudflow.

7.4 IMPACT ASSESSMENT METHODOLOGY BY PROJECT COMPONENT

All components of the proposed BRRTP are described in this section; however, for the purposes of this report, only potential impacts related to those components that would cross through the ANF, or that would affect watersheds within the ANF, will be discussed hereafter. For details regarding impact assessment for those components and sections of the BRRTP that would be located outside the ANF, please refer to the Water Resources Technical Report.

7.4.1. 230 kV Transmission Line

To assess impacts to water resources associated with the new 230 kV transmission line, each water resource within 0.5 mile of the proposed centerline was mapped at a scale of 1:24,000 using GIS. Based on this map, location-specific analyses of temporary and permanent impacts could be made, and after considering the inherent sensitivity of perennial streams, intermittent streams, NWI wetlands, and other water resources that could be affected, a determination was made of whether high, moderate, or low impacts would result. This analysis was conducted throughout all Project Alternatives.

For each of the initially proposed segments, the presence of streams, wetlands, aqueducts, wells, riparian habitat, RCAs, hydric soils, and 100-year floodplains within one-half mile of the centerline was determined to the nearest tenth of a mile, and mile marker begin/end points were recorded. Permanent and temporary impacts to each resource (in acres) were determined based on the ground disturbance level applicable to the location evaluated. Permanent disturbance within the ground disturbance areas would be limited to the tower foundations and the footprint of new access roads. All other ground disturbance would be temporary.

All initial probable 230 kV component impacts were re-assessed in light of the effectiveness of USFS BMPs, BRRTP General Practices (GPs) and Mitigation Measures (MMs) to reduce potential impacts. As summarized in Table 3 above, the initial 230 kV Project impacts were assessed with consideration to the sensitivity of each water resource type. After assigning initial ground disturbance impact levels for all water resources traversed by the 0.5-mile corridor for the centerline, BMPs, GPs and MMs were considered and the degree to which they would reduce the initial impact was evaluated. These BMPs, GPs and MMs were then applied, as appropriate, to reduce the level of residual impacts to each water resource.

7.4.2. New 230 kV Circuit

In the Castaic Transmission Corridor, LADWP has two existing parallel double-circuit 230 kV towers. The northern towers hold the Castaic-Olive 230 kV Transmission Line and the second position is vacant.

LADWP proposes the addition of approximately 12 miles of a new 230 kV transmission circuit onto existing Castaic – Olive 230 kV Transmission Line structures (towers 1-1 through 12-1).

7.4.3. Reconductoring

As part of the BRRTP, LADWP is proposing to upgrade the existing BR-RIN line from the Barren Ridge Switching Station to the Rinaldi Substation with larger-capacity conductors. Permanent impacts would occur from rehabilitation of the existing access and spur roads, and clearing of the right-of-way (ROW). By utilizing the existing structures and ROW, the Project would minimize permanent impacts while allowing additional transmission capacity along the corridor. Temporary impacts would occur where equipment staging, line work, or construction traffic access would be needed. Upgrading the existing BR-RIN would involve approximately 13 miles of USFS lands and four miles of BLM lands.

7.4.4. New Haskell Canyon Switching Station

Ground disturbance at the Haskell Canyon Switching Station site would lead to permanent impacts within the proposed switching site fence line and associated new access roads. The station would require an area of approximately 400 feet by 600 feet to accommodate the necessary equipment such as steel support structures, circuit breakers, disconnect switches, and associated equipment, and a relay house and control house containing control and protective relaying equipment. Temporary impacts within the area would occur where equipment staging, line work, or construction traffic access would be needed.

7.4.5. Expansion of Barren Ridge Switching Station

Expansion of the Barren Ridge Switching Station site would lead to permanent impacts within the proposed site fence line. LADWP proposes expansion of the existing Barren Ridge Switching Station to the east side by 235 feet by 500 feet for a total station size of 485 feet by 500 feet (approximately 5.6 acres). Existing access roads would be used and permanent impacts would be restricted to the site expansion. Temporary impacts within the area would occur where equipment staging, line work, or construction access would be needed.

7.5 IMPACTS AND MITIGATION PLANNING

Potential impacts to water resources include temporary (construction-related) impacts and long-term (permanent) impacts. When evaluating potential impacts to water resources, it was assumed that the Project would comply with all applicable federal, state, and local regulatory requirements that protect surface water and groundwater.

The USFS, Pacific Southwest Region has established water quality protection BMPs and BMP evaluation protocols for use on Forest lands. The following USFS BMPs will be implemented on Forest lands as part of the proposed Project:

PRACTICE 2-1: Locate and design roads with minimal resource damage. Roads will be located to fit the terrain, and to minimize damage to improvements and resources. Sensitive areas such as wetlands, inner gorges, and unstable ground will be avoided to the extent practical.

PRACTICE 2-2: Erosion Plan. An erosion plan will be included as part of the required SWPPP, and implemented throughout the Project to limit and mitigate erosion and sedimentation during construction activities.

PRACTICE 2-3: Timing of construction activities. To minimize erosion and sedimentation, construction activities will be planned to occur during minimal runoff periods to the extent practical.

PRACTICE 2-4: Stabilization of slope surfaces and spoil disposal areas. To minimize post-construction erosion from exposed or disturbed work areas, LADWP shall prepare a Restoration and Revegetation

Plan for the project. The Plan shall be incorporated into the Special Use Authorization to be issued by the USFS.

PRACTICE 2-12: Servicing and refueling of equipment. To prevent pollutants such as fuels, lubricants, and other harmful materials from being discharged into or near rivers, streams, or wetlands, refueling, or addition or changing of oil and other fluids for equipment and heavy machinery shall be performed only at approved staging and construction areas. Staging and construction yards will be located on upland sites and spill containment measures will be used to minimize risk of spill or drainage into waterways. Oil and other fluids will be disposed of as required by California law. Emergency refueling, or emergency addition or changing of oil or other fluids shall not be performed within 500 feet of natural stream channels or wetlands.

PRACTICE 7-2: Floodplain hazard analysis and evaluation. Structures and new access roads placed with a 100-year floodplain will be engineered so that they do not impede or redirect flood flows or raise the flood elevation; in addition, structures located within the 100-year floodplain of rivers and streams will be designed to minimize the capture of flood debris to prevent flow obstructions and scouring during flood flows.

PRACTICE 7-3: Protection of wetlands. To avoid adverse water quality impacts associated with destruction, disturbance, or modification of wetlands, Project features will be places so as to avoid sensitive features including, but not limited to, riparian areas and water courses. If sensitive water resource features such as riparian areas, habitats of endangered species, streambeds, and wetlands cannot be avoided, a qualified biological contractor shall conduct site-specific assessments for each affected site. These assessments shall be conducted in accordance with USACE wetland delineation guidelines, as well as California Department of Fish and Game streambed and lake assessment guidelines, and shall include impact minimization measures to reduce wetland impacts. Staging/storage areas for equipment and materials shall be located outside of riparian areas. Construction of new access through streambeds that require filling for access purposes would require a Streambed Alteration Agreement from CDFG and/or consultation with the USACE.

PRACTICE 7-4: Forest and Hazardous Substance Spill Prevention, Countermeasure, and Control (SPCC) Plan. To prevent contamination of waters from accidental spills, LADWP will prepare or update an existing Spill Prevention, Countermeasure, and Control Plan for proposed and/or expanded switching stations if necessary or required by EPA guidelines. The plans will include engineered and operational methods for preventing, containing, and controlling potential fluid releases, and provisions for quick and safe cleanup.

PRACTICE 7-5: Control of activities under Special Use Permit. To protect surface and subsurface water quality from physical, chemical, and biological pollutants resulting from activities that are under Special Use Permit, the Project will comply with conditions of the Permit, including management requirements and mitigation measures necessary to protect water quality. The Project will also conform to all applicable State and local regulations governing water quality and sanitation.

PRACTICE 7-6: Water quality monitoring. A water quality monitoring plan will be prepared as part of the required SWPPP. Analysis of the data will be performed by a State-certified laboratory, trained Forest personnel, or combinations of these as appropriate.

PRACTICE 7-7: Management by closure to use (seasonal, temporary, and permanent). If the condition of a watershed becomes sensitive to the extent that any use during a given portion of year could result in soil and/or land stability problems and associated adverse effects could adversely affect water quality, the Forest Supervisor, District Ranger, or Forest Service Officer responsible for resource protection may determine that a particular resource needs protection from use and decide to close an area. This would occur only after an evaluation of alternative methods of protection dictate that closure is the required action, and is usually a last step protective measure.

In addition to the USFS BMPs, the GPs described in Table 4 below are measures that would be included in the Project description and implemented as part of the proposed Project.

Impact analysis assumed that all BMPs and GPs would be implemented as defined. The specifically recommended Mitigation Measures described in Table 5 below would be used on a site-specific basis to minimize Project-related impacts if it is determined that BMPs and GPs would not fully mitigate the impacts for which they are presented.

TABLE 4. GENERAL PRACTICES

	Plans
GP-1	**Plan of Development & Construction, Operation and Maintenance Plans.** In consultation with the Forest Service and BLM Authorizing Officers prior to construction, LADWP shall develop a Construction, Operation and Maintenance Plan (COM Plan) with the Forest Service and Plan of Development (POD) with BLM. These plans shall be attached to and become a part of the Special Use and Right-of-Way Authorizations. The COM Plan and POD shall include, at a minimum, road maintenance specifications, vegetation treatment and rehabilitation specifications, and conditions on maintenance and replacement of improvements. The agencies may combine the POD and COM plans into a single document for the Project.
GP-3	**Hazardous Materials/Waste Management Plan.** A project-specific hazardous materials management and hazardous waste management program will be developed prior to initiation of the project. The program will outline proper hazardous materials use, storage and disposal requirements as well as hazardous waste management procedures. The program will identify types of hazardous materials to be used during the project and the types of wastes that will be generated. All project personnel will be provided with project-specific training. This program will be developed to ensure that all hazardous materials and wastes were handled in a safe and environmentally sound manner. Hazardous wastes will be handled and disposed of according to applicable rules and regulations. Employees handling wastes will receive hazardous materials training and shall be trained in hazardous waste procedures, spill contingencies, waste minimization procedures and Treatment, Storage and Disposal Facility (TSDF) training in accordance with OSHA Hazard Communication Standard and 22 CCR. If degraded soil or groundwater is encountered during excavation (e.g., there is an obvious sheen, odor, or unnatural color to the soil or groundwater), it shall be excavated, tested, and disposed of in accordance with state hazardous waste disposal requirements. The Plan shall also include procedures detailing emergency responses to releases of hazardous materials. It will prescribe hazardous materials handling procedures for reducing the potential for a spill during construction, and will include an emergency response program to ensure quick and safe cleanup of accidental spills. All hazardous materials spills or threatened release, including petroleum products such as gasoline, diesel, and hydraulic fluid, regardless of the quantity spilled, will be immediately reported to the appropriate agency as outlined in the Plan if the spill has entered a navigable water, stream, lake, wetland, or storm drain, if the spill impacted any sensitive area including conservation areas and wildlife preserves, or if the spill caused injury to a person or threatens injury to public health. All construction personnel, including environmental monitors, will be aware of state and federal emergency response reporting guidelines.
GP-5	**Stormwater Pollution Prevention Plan.** A project-specific Construction Stormwater Pollution Prevention Plan (SWPPP) will be prepared and implemented prior to the start of construction. The SWPPP will utilize Best Management Practices (BMPs) to address the storage and handling of hazardous materials and sediment runoff during construction activities.
GP-6	**Spill Prevention, Countermeasure, and Control Plan.** LADWP will prepare or update existing Spill Prevention, Countermeasure, and Control Plan (SPCC Plan) for proposed and/or expanded switching stations if necessary or required by EPA guidelines. The plans will include engineered and operational methods for preventing, containing, and controlling potential fluid releases, and provisions for quick and safe cleanup.
GP-7	**Soil Management Plan.** A Soil Management Plan will be developed and implemented for construction of the proposed Project. The objective of the Soil Management Plan is to provide guidance for the proper handling, onsite management, and disposal of impacted soil that might be encountered during construction activities. The plan will include practices that are consistent with California Title 8, Occupational Safety and Health Administration (Cal-OSHA) regulations, as well as appropriate remediation standards that are

	protective of the planned use. The Plan will provide guidelines for identification of impacted soil, assessing impacted soil, soil excavation, impacted soil storage, verification sampling, and impacted soil characterization and disposal. In the event that potentially contaminated soils are encountered within the footprint of construction, soils will be tested and stockpiled. The appropriate Certified Unified Program Agency (CUPA) will determine whether further assessment is warranted.
Design	
GP-11	Project features will be placed so as to avoid sensitive features including, but not limited to, riparian areas, water courses, and cultural sites, and/or to allow conductors to clearly span the features, within limits of standard tower design. This will minimize the amount of sensitive features disturbed and/or reduce visual contrast.
GP-12	Drainage control features will be installed, as appropriate, to minimize the amount of stormwater flow from areas of active construction. Details would be described in the SWPPP.
Construction Vehicles/Equipment	
GP-15	All trucks hauling soils or other loose materials shall be covered, or maintain at least two feet of freeboard (distance between the material and the top of the truck).
GP-16	Where visible soil material is carried onto adjacent public streets, the affected streets shall be cleaned daily with water sweepers.
GP-17	All vehicles and equipment operating within 100 feet of an active stream will be inspected daily to ensure they are free of any leaks of fuel, cooling, or lubricating fluids.
GP-18	All construction vehicles shall maintain a hazardous materials spill kit, which shall include absorbent materials, tarps, small storage containers or waterproof bags, and latex gloves. Field personnel shall be made aware of these kits and instructed on how to use them.
GP-19	Refueling, or addition or changing of oil and other fluids for equipment and heavy machinery shall be performed only at approved staging and construction yards. Staging and construction yards will be located on upland sites and spill containment measures will be used to minimize risk of spill or drainage into waterways. Oil and other fluids will be disposed of as required by California law. Emergency refueling, or emergency addition or changing of oil or other fluids shall not be performed within 500 feet of natural stream channels or wetlands.
GP-20	Helicopters utilized for construction will be refueled at helicopter staging areas or local airports. Procedures will include the use of drop cloths made of plastic and drip pans and trays to be placed under refilling areas to ensure that chemicals do not come into contact with the ground. Refueling areas will be located in designated areas where absorbent pads and trays are available.
Access Roads	
GP-23	The alignment of any new access roads or overland routes shall follow the designated area's landform contours where possible, providing that such alignment does not additionally impact resource values.
GP-24	To the extent practical, any re-grading of access roads shall be the minimum necessary to provide safe access of construction equipment, and erosion control measures.
GP-25	Construction vehicles shall use paved roads to access the construction site when available.
GP-33	In areas where soils and vegetation are particularly sensitive to disturbance, existing access roads would be repaired only in areas where they are otherwise impassable or unsafe.
Construction Areas	
GP-34	Construction activities shall be limited to the designated right-of-way and approved access and work areas as identified in the ROD and POD. Any deviations from the approved areas must be cleared with the jurisdictional agency and/or landowner.
GP-35	Grading areas shall be clearly marked and no equipment or vehicles shall disturb slopes or drainages outside of the grading area.
GP-36	No paint or permanent discoloring agents will be applied to rocks or vegetation to indicate survey or construction activity limits.
GP-37	In construction areas (e.g., marshalling yards, tower sites, spur roads from existing access roads) where ground disturbance is significant or where recontouring is required, surface restoration shall occur as required by the landowner or land management agency. The method of restoration will normally consist of returning disturbed areas back to their natural contour, reseeding, installing cross drains for erosion control as necessary, placing water bars in the road as necessary, and filling ditches.
GP-38	Soil excavated from construction activities shall not be left at work areas where the slopes exceed 10 percent or where the work area is within 100 feet of a natural stream or waterbody (receiving water). In these situations, loose soil shall be used elsewhere within the immediate area or stockpiled at the staging area. Stockpiled soil shall be managed as required by the SWPPP. No stockpiling or spreading of soil or

	other materials shall occur within stream channels.
GP-39	During grading or excavation work for the Project, the contractor shall observe the exposed soil for visual evidence of contamination. If visual contamination indicators are observed during construction, the contractor shall stop work until the material is properly characterized and appropriate measures are taken to protect human health and the environment. The contractor shall document the exact location of the contamination and shall immediately notify a designated Environmental Monitor and propose actions for addressing the contamination in accordance with the Soil Management Plan.
GP-40	Existing watering facilities (e.g., tanks, developed springs, water lines, wells, etc.) will be repaired or replaced, if they are damaged or destroyed by construction activities, to their pre-disturbed condition as required by the landowner or land management agency.
GP-41	Allow natural vegetation to reoccur on temporarily disturbed areas following the completion of construction.
GP-43	Every effort will be made to minimize vegetation removal and permanent loss at construction sites. Native vegetation will be flagged for protection or stockpiled for recontouring use at the discretion of the Biological Monitor and the Construction Supervisor.
GP-44	In construction areas where recontouring is not required, vegetation will be left in place wherever possible and the original contour will be maintained to avoid excessive root damage and allow for resprouting. Disturbance will be limited to overland driving where feasible to minimize changes in the original contours.
GP-45	Use of heavy equipment within a flowing channel will be avoided if possible; however, should it be necessary, the Environmental Monitor will be notified prior to initiation of construction activities to allow adequate time for site visits and surveys, if necessary.
GP-46	Asphalt or cement equipment will not be rinsed in, nor excess products deposited into any stream or other waterway. Asphalt or concrete effluent will not be allowed to enter into stream or RCA. Effluent will be removed from standing water and prevented from entering a waterway.
GP-47	Fill material, including brush, loose soils, and other similar debris will not be deposited within a stream channel or on a stream bank.
Surveys/Monitoring	
GP-48	**Biological Monitor.** For areas identified as environmentally sensitive, such as streams, wetlands, riparian areas, and other environmentally sensitive areas, a biological monitor shall be present during ground disturbing construction activities. The qualified biologist shall conduct monitoring for any area subject to disturbance from construction activities that may impact biological resources. The biological monitor's duties include minimizing impacts to special-status species, native vegetation, wildlife habitat, and unique resources, as well as to identify potential issues or impacts to biological resources and report those to the authorized biologist. Where appropriate, the monitor will flag the boundaries of biologically sensitive areas and monitor any construction activities in these areas to ensure that ground disturbance activities and impacts occur within designated limits.
GP-49	**Worker Environmental Awareness Program.** A Worker Environmental Awareness Program (WEAP) will be implemented to educate all construction personnel of the area's environmental conditions and the environmental protection measures that must be adhered to. An environmental training program will be established to communicate environmental concerns and appropriate work practices, including spill prevention, emergency response measures, protection of biological and cultural resources, and proper Best Management Practice (BMP) implementation, to all construction and maintenance personnel.
Coordination/Permits	
GP-50	Prior to construction, LADWP shall consult with all federal, state, and local agencies, including local agency consortiums, having jurisdiction over lands affected by the proposed Project's ROW and ancillary facilities to ensure that no permanent restrictions or preclusions of their land management practices occur.
GP-53	Incorporate riparian area avoidance and permit measures. The following actions and all permit conditions detailed within the Nationwide 12 permit and RWQCB 401 water quality certification (subject to separate approval) would be implemented by the construction manager and environmental compliance monitor(s). Before construction, qualified resource specialists would stake and flag or fence exclusion zones around all identified riparian woodlands. Such exclusion zones would include a 10-foot buffer to preclude sediment intrusion into the riparian areas. Earth-moving activities would be restricted from these zones, although essential vehicle operation and foot travel would be permitted on existing roads, bridges, and crossings. All other construction activities, vehicle operation, material and equipment storage, and other surface-disturbing activities would be prohibited within the exclusion zone. In areas where riparian habitats are unavoidable, the construction manager in consultation with the lead environmental compliance inspector would narrow the width of the centerline to the maximum extent allowable. New spur roads and existing access road improvements would be constructed and implemented using methodology that preserves existing hydrology. Tower pad clearance would be minimized to the maximum extent allowable. All

	temporarily disturbed riparian areas that would not be utilized for future routine operation and maintenance activities would be restored to ensure no net loss of habitat functions and values. Following construction activities, the areas would be restored as soon as practicable.
GP-54	Construction crews will avoid impacting the streambeds and banks of any streams along the route to the extent feasible. When construction or maintenance work affects the bed, bank or margins of a stream under CDFG jurisdiction, LADWP will notify CDFG as required under Fish and Game Code Section 1602, which may include securing a Streambed Alteration Agreement.

TABLE 5. SPECIFICALLY RECOMMENDED MITIGATION MEASURES

Measure	Description
HYD – 1	For Project construction and operation, off-road or cross-country access routes shall be preferred, as feasible, over the construction of new access roads. Such access roads will be approved in advance by the Environmental Monitor and the Project Manager and be flagged with easily seen markers. Any new access roads shall be constructed by crushing, rather than blading, wherever possible. Existing crossings shall be utilized at perennial streams, wetlands, and irrigation channels to the extent feasible. New access roads not required for ongoing maintenance shall be permanently closed after construction using the most effective and least environmentally damaging methods appropriate to that specific area, with concurrence of the landowner or land manager (e.g., stockpiling and replacing topsoil, or rock replacement).
HYD – 2	Roads would be built as near as possible to right angles to the streams and washes. Culverts would be installed where necessary. All construction and maintenance activities shall be conducted in a manner that would minimize disturbance to vegetation, drainage channels, and intermittent or perennial stream banks. In addition, road construction would include dust-control measures during construction in sensitive areas. All existing roads would be left in a condition equal to or better than their condition prior to the construction of the transmission line.
HYD – 3	New impervious areas associated with temporary construction will be restored to existing conditions, including but not limited to revegetation, to the extent possible after completion of Project construction.
HYD – 4	Stormwater drainage inside switching station walls will be designed to minimize erosion and increase sediment control. Internal runoff would be released from the switching station by means of surface drainage structures designed to filter contaminants from water flow. Drainage from the property would be collected and controlled by surface improvements, as detailed in the SWPPP.
HYD – 5	Structures and new access roads placed within a 100-year floodplain will be engineered so that they do not impede or redirect flood flows or raise the flood elevation.
HYD – 6	Structures located within the 100-year floodplain of rivers and streams will be designed to minimize the capture of flood debris to prevent flow obstructions and scouring during flood flows.
HYD – 7	Structures located adjacent to or downslope of lakes and reservoirs will be designed to minimize damage from inundation of a seismic seiche.
HELICOPTER	Helicopter Mitigation shall be implemented in steep areas of the Angeles National Forest where access is limited. During final design of the Project, areas other than those currently identified on Alternatives 1 and 2a may potentially require helicopter construction of the towers. This determination would generally be made where tower sites have no existing access roads within 300 feet and slopes are greater than 25 percent. Final identification of these tower sites would be determined and agreed upon by USFS, BLM and LADWP.
AIR – 2a	**Implement Construction Fugitive Dust Control Plan.** The construction contractor shall develop a Fugitive Dust Emission Control Plan for construction work. Measures to be incorporated into the plan include, but are not limited to, the following where practical: • Water the disturbed areas of the active construction sites in sufficient quantities to prevent the generation of visible dust plumes. Watering may not be required in wet weather. Soil binders may be used in lieu of watering where soil binders are appropriate and prevent the generation of visible dust plumes. • Enclose, cover, or apply water a minimum of twice daily to exposed piles with a five percent or greater silt content. • ARB-certified and agency-approved (on federal lands) non-toxic soil binders shall be applied per manufacturer recommendations to active unpaved roadways, unpaved staging areas, and unpaved parking area(s) throughout construction (as allowed by responsible agencies such as the USFS and BLM) to reduce fugitive dust emissions. Other watering products, selected from lists available from the Environmental Protection Agency's (EPA's) Environmental Technology Verification program or the SCAQMD, may be applied per manufacturer recommendations in place of the ARB-certified soil binders if such products can be reasonably demonstrated to be as effective as the ARB-certified non-

Measure	Description
	toxic soil binders and be approved by the affected federal agency. • Water all roads used for any vehicular traffic at least once per every two hours of active operations [3 times per normal 8-hour work day]; OR Water all roads used for any vehicular traffic once daily and restrict vehicle speeds to 15 miles per hour. Apply a chemical stabilizer to all unpaved road surfaces in sufficient quantity and frequency to maintain a stabilized surface, to reduce fugitive dust emissions. • All vehicle tires shall be inspected, are to be free of dirt, and washed as necessary prior to entering paved roadways. In lieu of washing vehicle tires, the construction contractor may sweep roads on a regular basis or employ similar methods to reduce dust track-out. • Install wheel washers or wash the wheels of trucks and other heavy equipment where vehicles exit unpaved areas. • Cover all trucks hauling soil and other loose material, or require at least two feet of freeboard. • Establish a vegetative ground cover (in compliance with biological resources impact mitigation measures) as appropriate or otherwise create stabilized surfaces on all unpaved areas at each of the construction sites after active construction operations have ceased. • Increase the frequency of watering unpaved surfaces under active construction to more than three times daily, or implement other additional fugitive dust mitigation measures, to all active disturbed fugitive dust emission sources as required by SCAQMD Rule 403 prior to wind events. • Travel routes to each construction site shall be developed to minimize unpaved road travel.
AIR – 2b	**Properly Maintain Mechanical Equipment.** The construction contractor shall ensure that all mechanical equipment associated with Project construction is properly tuned and maintained in accordance with the manufacturer's specifications to the extent feasible.
AIR – 2f	**Off-road Diesel-fueled Equipment Standards.** All off-road construction diesel engines not registered under ARB's Statewide Portable Equipment Registration Program, which have a rating of 50 horsepower (hp) or more, shall meet, at a minimum, the Tier 2 California Emission Standards for Off-Road Compression-Ignition Engines as specified in California Code of Regulations, Title 13, Section 2423(b)(1) unless such engine is not available for a particular item of equipment. In the event a Tier 2 engine is not available for any off-road engine larger than 100 hp, that engine shall be equipped with a Tier 1 engine. In the event a Tier 1 engine is not available for any off-road engine larger than 100 hp, that engine shall be equipped with a catalyzed diesel particulate filter (soot filter), unless certified by engine manufacturers that the use of such devices is not practical for specific engine types. Equipment properly registered under and in compliance with ARB's Statewide Portable Equipment Registration Program are in compliance with this mitigation measure.
BIO – 1	*Provide restoration/compensation for impacted sensitive vegetation communities.* **1a.** The intent of this mitigation measure is to require LADWP to restore disturbed sites to pre-construction conditions or the desired future conditions per the Angeles National Forest (ANF) Land Management Plan (LMP). Prior to construction LADWP shall have a qualified biologist, where concurrence on the biologist has been provided by the USFS and BLM, document the community type and acreage of vegetation that would be subject to Project disturbance. Impacts to all oaks and native trees will be documented by identifying the species, number, location, and diameter at breast height (DBH). On non-federal lands, all protection and replacement measures shall be consistent with applicable local jurisdiction requirements, such as the Los Angeles County Oak Tree Ordinance. Tree removal shall not be permitted until replacement trees have been planted or transplanting sites are approved. 1) For NFS and BLM lands, the USFS and BLM shall prepare a Habitat Restoration and Revegetation Plan, in discussion with LADWP, for the Project, which shall include plans for restoration, enhancement/re-vegetation and/or mitigation banking. For non-federal lands, LADWP shall prepare the Habitat Restoration and Revegetation Plan. Both plans shall include at minimum: (a) the location of the mitigation site (off-site mitigation may be required); (b) locations and details for topsoil storage; (c) the plant species to be used; (d) seed and cutting collecting guidelines; (d) a schematic depicting the mitigation area; (e) time of year that the planting will occur and the methodology of the planting; (f) a description of the irrigation methodology for container, bare-root or other planting needing irrigation; (g) measures to control exotic vegetation on site; (h) success criteria; (i) a detailed monitoring program;(j) locations and impacts to all oaks and native trees (over 3 inches DBH); (k) locations of temporary or permanent gates, barricades, or other means to control unauthorized vehicle access on access and spur roads as deemed necessary by the USFS and BLM (NFS and BLM lands only). 2) LADWP shall utilize a USFS/BLM approved locally collected seed mix, locally collected cuttings, bare-root stock, etc. to revegetate areas disturbed by construction activities. All habitats dominated by non-native species prior to Project disturbance shall be revegetated using appropriate native species.

Measure	Description
	USFS/ BLM approval is required for seeding on NFS/BLM land. The seed mix shall consist of native, locally occurring species collected from local seed sources. Cuttings and bare-root stock shall be of local origin. Restoration shall include the revegetation of stripped or exposed work sites and/or areas to be mitigated with vegetation native to the area. No commercially purchased seeds, stock, etc. will be accepted without the approval of the USFS and BLM on NFS/BLM lands, and seeds must be certified to be free of noxious weeds. Revegetation shall include ground cover, grass, shrub, and tree species in order to match disturbed areas to surrounding conditions and to restore or improve wildlife habitat quality to pre-Project or higher levels. The Habitat Restoration and Revegetation Plan shall also include a monitoring element. Post seeding and planting monitoring will be yearly from years one to five and every other year from years six to ten, or until the success criteria are met. LADWP shall restore temporarily disturbed areas, including existing tower locations that are to be removed by the Project, to pre-construction conditions or the desired future conditions per the ANF LMP. If the survival and cover requirements have not been met, LADWP is responsible for replacement planting to achieve these requirements. Replacement plants shall be monitored with the same survival and growth requirements as previously mentioned. 3) On NFS land, the USFS will conduct a preconstruction evaluation of the probable impacts to all oaks and native trees in all construction-related disturbance areas. This evaluation shall be incorporated into the Habitat Restoration Plan and shall include the species and number of individuals, their DBH, location, and potential impact type. Construction within the driplines of all native trees and oak trees/shrubs, and incidental trimming or damage to trees along the proposed access/spur routes, shall not occur until the trees are evaluated by a USFS botanist or qualified arborist. This person shall identify appropriate measures to minimize tree loss, such as the placement of fence around the dripline, padding vehicles, minimizing soil removal or adding spoil around driplines, and the placement of matting under the existing dripline during construction activities. On the ANF, if a tree must have any construction-related activities such as equipment or soil staging within the drip zone, root pruning, or excessive branch pruning (greater than 25% in one year), then the tree must be monitored for five years for tree mortality. If any of these identified trees dies during the monitoring period, then the tree must be replaced at the rate appropriate to the DBH. 4) The replacement ratios (using rooted plants in liners or direct planting of acorns [for oaks]) for native trees or any oaks that are to be removed on the ANF shall be as follows: trees from 1 to 5 inches DBH shall be replaced at 3:1; trees from 5 to 12 inches shall be replaced at 5:1; trees from 12 to 24 inches shall be replaced at 10:1; trees from 24 to 36 inches shall be replaced at 15:1; and all oaks greater than 36 inches shall be replanted at a ratio of 20:1. The replacement ratio for damaged trees shall be 2:1 for trees with DBH less than 12 inches and a 5:1 ratio for trees with DBH greater than 12 inches. The DBHs for scrub oaks will be measured following California Department of Fish and Game (CDFG) guidelines. On the ANF. any oak or native tree that must be removed or killed as a result of construction or other Project-related activities shall be replaced in kind or mitigated (off-site) at a comparable value. Compliance shall be evaluated annually for years one to five and bi-annually for years six to ten (years after tree planting). Trees shall be planted at locations acceptable to the landowner or managing agency. All planting locations, procedures, and results shall be evaluated by a qualified arborist and USFS botanist. On non-federal lands, all protection and replacement measures shall be consistent with applicable local jurisdiction requirements, such as the Los Angeles County Oak Tree Ordinance. 5) Permanent impacts on federal lands shall be determined by the appropriate federal manager (USFS and BLM) at the ratios stated in Table BIO-MM-1 (see the Biological Resources Technical Report) or at a comparable value. On NFS and BLM lands, impacts will be considered permanent if the trees are not likely to recover by ten years post-disturbance. Where on-site restoration is planned for mitigation of temporary impacts to vegetation communities, LADWP shall identify a Habitat Restoration Specialist, where concurrence has been provided by the USFS, to implement the method of restoration outlined by the USFS/BLM in the Habitat Restoration Plan. 6) On USFS/BLM lands, the creation or restoration of habitat shall be monitored after mitigation site construction to assess progress and identify potential problems with the restoration site. This will be monitored on USFS/BLM lands until the success criteria are met, or annually for years one to five, and bi-annually for years six to ten. Remediation activities (e.g., additional planting, removal of non-native invasive species, or erosion control) shall be taken during the ten-year period if necessary to ensure the success of the restoration effort. If the mitigation fails to meet the established performance criteria after the ten-year maintenance and monitoring period, monitoring and remedial activities shall

Measure	Description
	extend beyond the ten-year period until the criteria are met or unless otherwise specified by the USFS/BLM (as appropriate). If a fire occurs in a revegetation area within the ten-year monitoring period, LADWP shall be responsible for a one-time replacement. If a second fire occurs, no replanting is required, unless the fire is caused by LADWP activity. Off-site mitigation for NFS/BLM and non-NFS/BLM lands may be required if mitigation rates exceed what can be achieved on NFS/BLM land. This may be in the form of funding for land purchase for inclusion into the Angeles National Forest, mitigation banking, removing existing structures, or comparable restoration efforts. **1b.** During and after construction, USFS/BLM-identified entrances to access roads on NFS/BLM lands shall be gated or blockaded in some manner and maintained to prevent the unauthorized use of these roads by the general public. Signs prohibiting unauthorized use of the access roads shall be posted on these gates. **1c. Treat cut tree stumps with Sporax.** All stumps of trees (conifers and hardwoods) resulting from activities associated with construction of the Project shall be treated with Sporax according to product directions to prevent the spread of annosus root disease. Only licensed applicators shall apply Sporax. Sporax shall not be used during rain events unless otherwise approved by the USFS.
BIO – 2	*The following prescriptions would prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way.* **2a Prepare and implement a Weed Control Plan.** LADWP/ANF/BLM shall prepare and implement a comprehensive, adaptive Weed Control Plan on NFS/BLM lands for pre-construction and construction invasive weed abatement. The long-term Weed Control Plan, including monitoring and eradication, will be defined as part of the 50 year Operations and Maintenance Permit. On the ROW easement lands administered by the USFS/BLM, the Weed Control Plan shall incorporate all appropriate and legal agency-stipulated regulations. The Weed Control Plan shall be submitted to the USFS/BLM for final authorization of weed control methods, practices, and timing prior to implementation of the Weed Control Plan on public lands. Weed control on BLM lands using pesticides will require an approved BLM Pesticide Use Permit. Pesticide Use Permits are issued for a maximum of three years. ROW easements located on private lands shall include adaptive provisions such as wheel and equipment washing for the implementation of the Weed Control Plan. The Weed Control Plan shall include the following: 1) A pre-construction weed inventory shall be conducted on NFS and BLM lands by surveying all areas subject to ground-disturbing activity, including, but not limited to, tower pad preparation and construction areas, tower removal sites, pulling and tensioning sites, assembly yards, and areas subject to grading for new or improved access and spur roads. Weed populations that: (1) are rated High or Moderate for negative ecological impact in the California Invasive Plant Inventory Database (Cal-IPC 2006); (2) aid and promote the spread of wildfires (such as cheatgrass, Saharan mustard, and medusa head); and (3) are considered by the USFS and/or BLM as species of priority (for NFS/BLM lands only) shall be mapped and described according to density and area covered. In areas subject to ground disturbance, weed infestations shall be treated prior to construction according to control methods and practices for invasive weed populations designed in consultation with the USFS/BLM. The Weed Control Plan shall be updated and utilized for eradication and monitoring post-construction. 2) Weed control treatments shall include all legally permitted herbicide, manual, and mechanical methods applied with the authorization of the USFS/BLM. The application of herbicides shall be in compliance with all State and federal laws and regulations under the prescription of a Pest Control Advisor (PCA), where concurrence has been provided by the USFS/BLM, and implemented by a Licensed Qualified Applicator. Herbicides shall not be applied during or within 72 hours of a scheduled rain event. Herbicides shall not be used within Riparian Conservation Areas (RCAs) on the ANF without approval of the USFS. In riparian areas, only water-safe herbicides shall be used. Herbicides shall not be applied when wind velocities exceed 6 mph. Where manual and/or mechanical methods are used, disposal of the plant debris will follow the regulations set by the USFS/BLM. The timing of the weed control treatment shall be determined for each plant species in consultation with the USFS/BLM (on NFS/BLM lands) with the goal of controlling populations before they start producing seeds. For the preconstruction and construction of the Project, measures to control the introduction and spread of noxious weeds in the Project work area shall be taken as follows. 3) On the ANF and BLM lands, surveying for new invasive weed populations and the monitoring of identified and treated populations shall be required at all sites impacted by construction (tower pads, staging areas, landing zones, etc.), including access/spur roads disturbed during the Project.

Measure	Description
	Surveying and monitoring for weed infestations shall occur annually for years one to five and bi-annually for years six to ten, or until success criteria are met. Treatment of all identified weed populations shall occur at an appropriate interval so as to meet the success criteria. When no new seedlings or resprouts are observed at treated sites for three consecutive, normal rainfall years, the weed population can be considered eradicated and weed control efforts may cease for that impact site. 4) During Project preconstruction and construction, all seeds and straw materials shall be weed-free rice straw, and all gravel and fill material shall be certified weed-free by the county Agriculture Commissioners' Offices. Any deviation from this must be approved by a USFS/BLM botanist. All plant materials used during restoration shall be native, certified weed-free, and approved by the USFS/BLM. 5) Prior to beginning preconstruction activities, the USFS, in coordination with LADWP, will determine suitable locations to install field washing stations as part of the Weed Control Plan. Prior to commencing construction activities, LADWP shall document that all vehicles, equipment, and tools used on the Project have been cleaned at existing construction yards or legally operating car washes. This is a one-time requirement designed to address the potential of new species of weeds being transported from outside the area. If, however, vehicles, equipment, or tools are used or driven off paved roads on non-NFS lands, washing must occur prior to entering USFS lands. During Project preconstruction and construction, all vehicles, equipment, or tools which will be used outside of permitted Project roadways shall be washed at the nearest station before operating off-road. In other areas also designated by the USFS, vehicles, equipment, and tools will be washed at the nearest station after exiting those areas. Vehicles that do not leave permitted Project roadways are not required to be washed after the initial washing described above. All washing shall take place where rinse water is collected and disposed of in either a sanitary sewer or landfill, unless otherwise approved by the USFS. Written daily logs shall be kept for all vehicle/equipment/tool washing that states the date, time, location, type of equipment washed, methods used, and staff present. The log shall include the signature of a responsible staff member. Logs shall be available to the USFS for inspection at any time and shall be submitted to the USFS permit administrator on a monthly basis. 6) During Project operation and maintenance activities, weeds shall be cleared and disposed of in assembly yards, helicopter landing areas, tower pads, spur roads, staging areas, and any other disturbance areas in a USFS/BLM-approved method. **2b Remove weed seed sources from construction access routes.** Prior to construction, LADWP shall initiate invasive species eradication. Populations to be treated will be small to moderate and isolated, but have the potential to spread aggressively during construction. Post-construction, these isolated populations will be included and treated according to the restoration plan. Per the Forest Service Manual (FSM) 2080 Best Management Practice (BMP) guideline, LADWP shall also remove or reduce sources of weed seed along the travel routes associated with Project construction identified in Appendix L. To prevent the introduction or control the spread of noxious weeds, hand removal or other control methods will be implemented to reduce seed production during Project construction. Following Project approval and during the time of year when weed species can be observed and identified, LADWP shall identify, using a qualified plant ecologist, any other weed seed sources that could contribute to Project-related weed spread on the ANF and BLM lands. Target infestations identified by Project surveys should be controlled prior to construction. LADWP shall initiate eradication of the target infestations discovered during pre-construction surveys along construction routes. **2c Remove weed seed sources from assembly yards, staging areas, tower pads, pull sites, landing zones, and spur roads.** Prior to construction and during each year of use for construction at all assembly yards, staging areas, tower pads, pull sites, landing zones, and spur roads within the ANF and BLM lands, weed-infested areas should be hand-weeded and/or treated as appropriate for the individual weed species under the guidance of a qualified plant ecologist or restoration ecologist, where concurrence on the ecologist has been provided by the USFS/BLM. Unless otherwise authorized by the USFS/BLM, weed control efforts in these areas shall be timed annually to reduce shortpod mustard, tocalote, bromes and other noxious weed seed production, by hand-removing or weed-whacking infestations when flowering has just started, but before seeds have been produced. All plant debris shall be disposed of at a USFS/BLM

Measure	Description
	approved location. Weed control efforts shall commence in early spring (February – March), as indicated annually by a qualified plant ecologist or restoration ecologist in coordination with LADWP and USFS/BLM botanist or weed specialist. **2d** **Use of Herbicides to Control Exotic Weeds.** LADWP may use herbicides where deemed necessary for the control of exotic weeds within the Project area. Weed control should be species-specific, and herbicides should be applied only if necessary after considering alternate methods or as part of a proven eradication strategy for that weed species. To minimize potential impacts, weed control treatments shall include all legally permitted herbicide, manual, and mechanical methods applied with the authorization of the USFS. Due to typically large seed banks and the ability of some weed species to vigorously resprout following removal methods, most species require more than one round of treatment, or require a different follow-up treatment method after the initial removal occurs. Any herbicide use on NFS lands would be subject to the review and approval of the appropriate USFS personnel and in coordination with LADWP.
BIO – 3	*Incorporate riparian area avoidance and permit measures.* The following actions and all permit conditions detailed within the Nationwide 12 permit and RWQCB 401 water quality certification (subject to separate approval) would be implemented by the construction manager and environmental compliance monitor(s). **3a** LADWP shall not construct or modify any structure, culvert, or bridge or modify any habitat on NFS lands in RCAs without the authorization of the USFS. Vegetation removal or road construction shall not occur in RCAs during the breeding season for nesting birds (February 1 to August 15) unless otherwise approved by the USFS. LADWP shall prepare and implement a USFS RCA Treatment Plan for the Project. This Plan shall include the specific activities that will occur at each of the RCA points crossed by the Project, including the amount and type of vegetation to be cleared, the type of road crossing or improvement allowed for wet and dry crossings, and the methods that would be employed to reduce the effects of the Project on water quality. The Plan shall include seasonal restrictions for vehicle or equipment passage, restrictions on what activities may occur (such as grading, vegetation removal or tree trimming), monitoring requirements, and restoration requirements. This Plan shall be submitted to the USFS for approval prior to construction or the grading of any access road. **3b** Before construction, qualified resource specialists shall stake and flag or fence exclusion zones around all identified riparian areas. Such exclusion zones will include a 10-foot buffer to preclude sediment intrusion into the riparian areas. Earth-moving activities shall be restricted from these zones, although essential vehicle operation and foot travel will be permitted on existing roads, bridges, and crossings. All other construction activities, vehicle operation, material and equipment storage, and other surface-disturbing activities will be prohibited within the exclusion zone. **3c** In areas where riparian habitats are unavoidable, the construction manager, in consultation with the lead environmental compliance inspector and USFS, shall narrow the width of the road through the area to the minimum extent required for safe travel. New spur roads and existing access road improvements shall be constructed and implemented using methodology that preserves existing hydrology. **3d** Towers shall not be constructed in riparian areas. **3e** All temporarily disturbed riparian areas that would not be utilized for future routine operation and maintenance activities shall be restored according to the guidelines of the Habitat Restoration Plan to the extent required to ensure no net loss of habitat functions and values. Following construction activities, the areas will be restored as soon as practicable. **3f** Permanent, unavoidable losses of riparian areas will be mitigated by restoration and/or preservation of off-site habitats, as outlined in the Habitat Restoration Plan. The final mitigation and off-site restoration locations will be determined in consultation with LADWP and the responsible agency(s). Mitigation acreage ratios will be consistent with those listed in Table BIO-MM-1.
BIO – 4	*Provide restoration/compensation for affected jurisdictional areas.* **4a** Impacts to areas under jurisdiction of the USACE, RWQCB, USFS and CDFG shall be avoided to the extent feasible. Where avoidance of jurisdictional areas is not feasible, including emergency repairs, and access/spur roads within RCAs, the applicant shall provide the necessary mitigation required as part of wetland permitting. This will include creation, restoration, and/or preservation of suitable jurisdictional habitat along with adequate buffers to protect the function and values of jurisdictional area mitigation. The location(s) of the mitigation will be determined in consultation with LADWP and the responsible agency(s) as part of the wetland permitting process. **4b** Measures 3a, b, c, and d will also be incorporated to avoid and protect jurisdictional areas.

7.5.1. Types of Impacts

Below are descriptions of the criteria in which an impact would be determined significant.

Construction-related Impacts

Violation of water quality standards, creation of new sources of polluted runoff, or other degradation of water quality.
Temporary impacts to water quality could result from stormwater runoff during construction of the Project. Construction of the transmission line and the new Haskell Canyon Switching Station, and reconductoring of the existing BR-RIN line, would require ground-disturbing activities, including clearing and grading for structure installation work areas, and access construction. Disturbed soils accelerate erosion and increase sediment in stormwater runoff to receiving waters, causing increased turbidity and sedimentation. Dewatering during construction activities could potentially release contaminated groundwater to surface water channels or drainage features. Additionally, fuel, oil, and other fluids used in construction vehicles, equipment, and heavy machinery could enter streams and contaminate water. Potential impacts to water quality from sedimentation, turbidity, and oil/chemical contamination would be less than significant. Application of GPs, and implementation of PRACTICE 2-1, 2-2, 2-3, 2-12, 7-4, 7-5, and 7-6, and mitigation measure HYD-1 would further reduce these potential impacts.

HYD-1 would minimize the potential for erosion, sedimentation, and increased turbidity by restricting where roads may be sited, minimize the use of blading for new road construction, and requiring the use of existing stream crossings, where feasible.

Substantial alteration of existing drainage patterns resulting in substantial erosion or siltation on- or off-site.
Construction of the transmission line and the new Haskell Canyon Switching Station, and reconductoring of the existing BR-RIN line would require ground-disturbing activities, including clearing and grading for structure installation work areas, and access construction. This ground disturbance could potentially alter drainage patterns within the work areas and result in soil erosion leading to increased sedimentation. Potential impacts resulting from substantial drainage pattern alteration would be significant without mitigation. Application of GPs, and implementation of PRACTICE 2-1, 2-2, 2-4, and 7-7, and mitigation measures HYD-1, HYD-2, and HELICOPTER would reduce potential impacts resulting from substantial drainage pattern alteration to less than significant.

Substantial alteration of existing drainage patterns, including through the alteration of the course of a stream or river, or substantial increase of the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.
Construction of the transmission line and the new Haskell Canyon Switching Station, and reconductoring of the existing BR-RIN line would require ground-disturbing activities, including clearing and grading for structure installation work areas, and access construction. The proposed transmission lines would cross numerous streams and drainages, including the Santa Clara River. Ground disturbance related to construction of the proposed transmission line could potentially alter drainage patterns within the work areas and result in an increase of the rate or amount of surface water runoff. Potential impacts resulting from flooding through alteration of existing drainage patterns would be significant without mitigation. Application of GPs, and implementation of PRACTICE 2-1, 2-2, 7-4, 7-5, and 7-6, and implementation of mitigation measures HYD-1, HYD-2, and HELICOPTER would reduce potential impacts resulting from runoff or flooding through alteration of existing drainage patterns to less than significant.

HYD-2 reduces potential impacts to existing drainage patterns of streams and washes by requiring new permanent or temporary roads to be constructed in a manner that would minimize disturbance to vegetation, drainage channels, and intermittent or perennial stream banks.

HELICOPTER mitigation would, where implemented, reduce the need for access roads to be constructed on very steep slopes. This would minimize alteration of drainage patterns, as well as related erosion, siltation, and flooding.

Creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems or contribution of substantial additional sources of polluted runoff.
Construction of the transmission line and the new Haskell Canyon Switching Station, and reconductoring of the existing BR-RIN line would require ground-disturbing activities, including clearing and grading for structure installation work areas, and access construction. Creation of new permanent access and spur roads or widening of existing roads would potentially create additional sources of runoff. Likewise, grading activities for construction of the new Haskell Canyon Switching Station would potentially contribute additional sources of polluted runoff. These potential impacts would be significant without mitigation.

Potential impacts related to contribution of substantial additional sources of polluted runoff would be less than significant. Application of GPs, and implementation of PRACTICE 2-3, 2-12 and 7-4 would further reduce these potential impacts.

Have substantial adverse effect on federal protected wetlands as defined by Section 404 of the Clean Water Act through direct removal, filling, hydrological interruption, or other means.
Construction of the transmission line and the new Haskell Canyon Switching Station, and reconductoring of the existing BR-RIN line would require ground-disturbing activities, including clearing and grading for structure installation work areas, and access construction. Construction of the new Haskell Canyon Switching Station may also require importation of soil for filling activities. These activities could impact wetlands by removing wetland vegetation and soils, or by filling wetlands with upland soils and destroying hydrological connectivity.

Potential impacts to federal protected wetlands would be less than significant. Application GPs and implementation of PRACTICE 2-1 AND 7-3 would further reduce these potential impacts.

Operation- and Maintenance-Related Impacts

Creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, or contribution of substantial additional sources of polluted runoff.
Construction of the new Haskell Canyon Switching Station and would create new impermeable surfaces with the potential to increase the rate of stormwater runoff and contribute additional sources of polluted runoff. Maintenance of access roads and structure pads (e.g., gravelling, vegetation clearance) would also contribute additional sources of stormwater runoff. Blading and other methods of vegetation removal for clearance of roads and construction areas would decrease the ability of the soil to absorb water and increase stormwater runoff from disturbed areas. Increased runoff could result in increased erosion, and siltation and flooding downstream of the disturbed areas. Application of GPs, and implementation of PRACTICE 2-12 and 7-4, and mitigation measures HYD-3 and HYD-4 would reduce these potential impacts to less than significant.

HYD-3: New impervious areas associated with temporary construction will be restored to existing conditions, including but not limited to revegetation, to the extent possible after completion of Project construction.

HYD-4: Stormwater drainage inside switching station will be designed to minimize erosion and increase sediment control, as detailed in the SWPPP.

Placement of structures within a 100-year flood hazard area which would impede or redirect flood flows.
Construction of the new 230 kV transmission line would result in the placement of tower structures within 100-year flood hazard areas. Structures placed in these areas could potentially impede flood flows or redirect flood flows to areas not currently within a flood hazard area by raising the base flood elevation level. Implementation of PRACTICE 7-2 and mitigation measures HYD-5 and HYD-6 would reduce potential impacts resulting from impeding or redirecting flood flows to less than significant.

HYD-5: Structures and new access roads placed within a 100-year floodplain will be engineered so that they do not impede or redirect flood flows or raise the flood elevation.

HYD-7: Structures located adjacent to lakes and reservoirs will be designed to minimize damage resulting from inundation from a seismic seiche.

Other Potential Impacts

Potential Project-related impacts resulting from construction, operation, and maintenance were assessed with regards to the following significance criteria. As discussed below, the Project was determined to have no impact with regards to these criteria, which will not be discussed hereafter.

Substantial depletion of groundwater supplies or interference with groundwater recharge resulting in a net deficit of aquifer volume or lowering of level of the local groundwater table.
No Impact. Construction of steel lattice structures for the new transmission line would require concrete foundations with footings averaging a depth of 20 feet, depending on soil conditions, and construction of TSPs would require foundations from 15 feet to 30 feet deep, depending on soil conditions.

Aquifers in the BRRTP area are generally unconfined, and depths of water-bearing formations exceed the distance required for foundations and footings. While there is potential for groundwater to be encountered during auguring activities along certain segments, dewatering activities are unlikely to deplete groundwater supplies. Construction, operation, and maintenance of the Project will not interfere with groundwater recharge or otherwise lower the levels of local groundwater tables.

Placement of housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
No Impact. Construction of the transmission line and the new Haskell Canyon Switching Station, and reconductoring of the existing BR-RIN line does not involve the placement of housing within a 100-year flood hazard area.

Exposure of people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.
No Impact. Although segments of the new 230 kV transmission line would be located adjacent to reservoirs, structures for the transmission line would be sited so that the line would span the area of hazard (e.g., Castaic Lake). Construction and operation of the Project would not cause or increase the likelihood of failure of a levee or dam that could result in flooding. As such, the Project would not expose people or structures to a significant risk of loss, injury, or death involving flooding resulting from the failure of a levee or dam.

8.0 IMPACT RESULTS

Project-related impacts were initially assessed without reference to USFS BMPs, GPs or MMs. Once initial impacts were determined using the methodology described in Section 7.0, BMPs, GPs and MMs were recommended and applied to each impact to minimize potential impacts resulting from construction, operation, and maintenance of BRRTP.

8.1 ALTERNATIVE 1

The Alternative 1 230 kV double-circuit transmission line would cross approximately 17 miles of ANF lands, and would affect seven 6th level watersheds: Liebre Gulch-Piru Creek, Lake Piru-Piru Creek, Fish Creek-Piru Creek, Upper Castaic Creek, Lower Bouquet Creek, Lower Castaic Creek, and San Francisquito Canyon. These watersheds have a combined area of 182,295 acres.

At the request of the USFS, a RUSLE analysis to estimate the rate of erosion resulting from construction and operation of the Project was performed for the portion of Alternative 1 that crosses the ANF. The RUSLE analysis estimated an average post-construction erosion increase of 0.68 percent (48.43 tons/acre/year), assuming no implementation of GPs, BMPs, or MMs. Of the studied watersheds, the Liebre Gulch-Piru Creek Watershed would have the largest potential increase (2.26 percent) over baseline conditions from construction of Alternative 1 (please see Appendix A for details of the RUSLE analysis).

The following subwatersheds along Alternative 1 were analyzed via WinTR-55: West Fork Liebre Gulch (ID2), Big Oak Flat (ID8), and Charlie Canyon (ID13). Results of the analysis indicated there would be no change in watershed-wide hydrograph characteristics as a result of construction of Alternative 1. In addition, these results are based on a very conservative approach: subwatersheds delineated to focus on the Alternative, assumption of 10-meter wide roads, and exclusion of any BMPs that would be mandated and monitored during construction. For a tabular and graphical representation of the model results for this subwatershed, please refer to Appendix C, Alternative 2 Results.

In the Forest, adverse effects of Alternative 1 would range from high to low before implementation of BMPs, GPs, and MMs, depending on the terrain. Alternative 1 would cross or closely parallel multiple intermittent streams, including West Fork Liebre Gulch, Trough Canyon, Posey Canyon, Big Oak Flat, Violin Canyon, Bitter Canyon, Charlie Canyon, and Dry Canyon. Alternative 1 would also cross or parallel approximately 23 RCAs. Alternative 1 would cross steep, rugged terrain (with slopes ranging from 10 percent to greater than 30 percent) where few roads exist that would be suitable for construction. Existing roads would have to be improved to allow for safe construction access and new roads would be constructed in currently roadless areas, increasing the risk of erosion and sedimentation downstream of disturbance areas; however, utilization of helicopters for construction within the steeper areas would decrease impacts resulting from erosion and sedimentation.

After implementation of GPs, PRACTICE 2-1, 2-2, 2-3, 2-12, 7-2, 7-4, 7-5, 7-6, and 7-7, and mitigation measures HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, and HELICOPTER, adverse effects resulting from construction of Alternative 1 would be less than significant.

8.2 ALTERNATIVE 2

The Alternative 2 230 kV double-circuit transmission line would cross approximately 13 miles of ANF lands, and would affect three 6th level watersheds: Elizabeth Lake, San Francisquito Canyon, and Lower Bouquet Canyon. These watersheds have a combined area of 66,181 acres.

For the portion of Alternative 2 that would cross the Forest, the RUSLE analysis estimated an average post-construction erosion increase of 1.18 percent (44.43 tons/acre/year), assuming no implementation of GPs, BMPs, or MMs. Of the studied watersheds, the Elizabeth Lake Watershed would have the largest potential increase (1.59 percent) over baseline conditions from construction of Alternative 2.

Along Alternative 2, the Lake Elizabeth subwatershed (2G1) was analyzed with WinTR-55. Results of the analysis indicated there would be no change in subwatershed-wide hydrograph characteristics as a result of construction of Alternative 2. In addition, these results are based on a very conservative approach: subwatershed delineated to focus on the Alternative, assumption of 10-meter wide roads, and exclusion of any BMPs that would be mandated and monitored during construction. For a tabular and graphical representation of the model results for these subwatersheds, please refer to Appendix C, Alternative 2 Results.

In the ANF, adverse effects of Alternative 2 would range from moderate to low before implementation of BMPs, GPs, and MMs, depending on the terrain. Alternative 2 would cross or closely parallel multiple intermittent streams, including Portal Canyon, Bee Canyon, Baird Canyon, Dry Canyon, and Pettinger Canyon. Alternative 2 would also cross or parallel 16 RCAs. Alternative 2 would cross steep, rugged terrain (with slopes ranging from 10 percent to greater than 30 percent) in relatively roadless areas. Existing roads would have to be improved to allow for safe construction access and new roads would be constructed in areas where no roads currently exist, increasing potential for erosion and sedimentation in areas downstream of disturbance areas.

After implementation of GPs, PRACTICE 2-1, 2-2, 2-3, 2-12, 7-2, 7-3, 7-4, 7-5, 7-6, and 7-7, and implementation of mitigation measures HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, and HYD-6, potential adverse effects resulting from construction of Alternative 2 would be less than significant.

8.3 ALTERNATIVE 2A

The Alternative 2a 230 kV double-circuit transmission line would cross approximately 16 miles of ANF lands, and would affect four 6th level watersheds: Elizabeth Lake, Elizabeth Lake Canyon, San Francisquito Canyon, and Lower Bouquet Canyon. These watersheds have a combined area of 99,685 acres.

Alternative 2a was developed after completion of the RUSLE analysis; however, given that Alternative 2a is identical to Alternative 2 with the exception of a deviation to the west around South Portal Canyon, it may be assumed the average estimated post-construction erosion increase due to construction of Alternative 2a would be similar to that of Alternative 2, keeping in mind that Alternative 2a would also cross approximately 0.7 mile of the Elizabeth Lake Canyon Watershed.

Given the overall similarity of Alternative 2a to Alternative 2, the Lake Elizabeth subwatershed (2G1) was considered as representative of watersheds affected by Alternative 2a, as well as of Alternative 2; therefore, the Lake Elizabeth subwatershed analysis results for Alternative 2 are applicable to Alternative 2a. As previously described, results of the analysis indicated there would be no change in subwatershed-wide hydrograph characteristics as a result of construction of Alternative 2a. As formerly discussed, these results are based on a very conservative approach: subwatershed delineated to focus on the Alternative, assumption of 10-meter wide roads, and exclusion of any BMPs that would be mandated and monitored during construction. For a tabular and graphical representation of the model results for this subwatershed, please refer to Appendix C, Alternative 2 Results.

In the Forest, adverse effects of Alternative 2a would range from high to low before implementation of BMPs, GPs, and MMs, depending on the terrain. Alternative 2a would cross or closely parallel multiple intermittent streams, including Bruns Canyon, South Portal Canyon, Munz Canyon, Portal Canyon, Bee Canyon, Baird Canyon, Dry Canyon, and Pettinger Canyon. Alternative 2a would also cross or parallel 16 RCAs. Alternative 2a would cross steep, rugged terrain (with slopes ranging from 10 percent to greater than 30 percent) in relatively roadless areas. Existing roads would have to be improved to allow for safe construction access and new roads would be constructed in areas where no roads currently exist, increasing potential for erosion and sedimentation in areas downstream of disturbance areas.

In the portion of Alternative 2a that would deviate to the west toward South Portal Canyon, where existing access is limited or resources are very sensitive, helicopter construction (HELICOPTER) would be utilized as a general mitigation measure to reduce the need for construction of new access roads for tower construction. This measure would minimize ground disturbance associated with crane pads, structure laydown areas, and the need for large construction vehicles and equipment. In certain areas of the Forest, new temporary access roads may be constructed for access to pulling and tensioning sites and staging areas.

After implementation of GPs, PRACTICE 2-1, 2-2, 2-3, 2-12, 7-2, 7-3, 7-4, 7-5, 7-6, and 7-7, and mitigation measures HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, and HELICOPTER, adverse effects resulting from construction and operation of the Alternative 2a transmission line would be less than significant.

8.4 ALTERNATIVE 3

The Alternative 3 230 kV double-circuit transmission line would cross approximately 4.7 miles of ANF lands, and would affect three 6th level watersheds: Agua Dulce Canyon, Mint Canyon, and Upper Bouquet Canyon. These watersheds have a combined area of 61,995 acres.

For the portion of Alternative 3 that would cross the ANF, the RUSLE analysis estimated an average post-construction erosion increase of 1.35 percent (35.82 tons/acre/year), assuming no implementation of GPs, BMPs, or MMs. Of the studied watersheds, the Agua Dulce Canyon Watershed would have the largest potential increase (2.04 percent) over baseline conditions from construction of Alternative 3.

Along Alternative 3, the subwatershed of Unnamed Tributary of Mint Canyon (316) was analyzed using WinTR-55. Results of the analysis indicated there would be no change in subwatershed-wide hydrograph characteristics as a result of construction of Alternative 3. As with the aforementioned analyses, these results are based on a very conservative approach: subwatershed delineated to focus on the Alternative, assumption of 10-meter wide roads, and exclusion of any BMPs that would be mandated and monitored during construction. For a tabular and graphical representation of the model results for this subwatershed, please refer to Appendix C, Alternative 3 Results.

In the Forest, adverse effects of Alternative 3 would range from high to moderate before implementation of BMPs, GPs, and MMs, depending on the terrain. Alternative 3 would cross or closely parallel several intermittent streams, including Vasquez Canyon. Alternative 3 would not cross RCAs. Alternative 3 would cross steep, rugged terrain (with slopes ranging from 10 percent to greater than 30 percent). Existing roads would have to be improved to allow for safe construction access and new roads would be constructed in areas where no roads currently exist, increasing potential for erosion and sedimentation in areas downstream of disturbance areas.

After implementation of GPs, PRACTICE 2-1, 2-2, 2-3, 2-12, 7-2, 7-4, 7-5, 7-6, and 7-7, and implementation of mitigation measures HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, and HYD-6, potential adverse effects resulting from construction of Alternative 3 would be less than significant.

8.5 NO ACTION ALTERNATIVE

Under the No Action Alternative, the construction of a new 230 kV transmission line, the addition of a new circuit on existing structures from Haskell Canyon to the Castaic Power Plant, the reconductoring of the existing BR-RIN transmission line, and the construction of a new Haskell Canyon Switching Station would not occur. Current, on-going operation and maintenance activities for existing facilities in the Project area would continue.

9.0 CUMULATIVE WATERSHED EFFECTS

9.1 INTRODUCTION

Cumulative effects are those effects that result from incremental impacts of the proposed action when added to other past, present and reasonably foreseeable future actions. Analysis of cumulative effects places project-specific impacts into a broader context that takes into account the full range of impacts of actions taking place over a given space and time. Cumulative effects may be considered a significant impact to the environment, as degradation of important resources may result from the combined, incremental effects of actions. Cumulative effects may result from individually minor or insignificant actions, which collectively may be considered significant as they accumulate over time and space from one or more actions or sources.

9.2 IMPACT AREA

The BRRTP Alternatives are located in 12 6th level watersheds, as described in Section 4.2, all of which are located within the greater Santa Clara River Watershed (HUC 18070102). Since the BRRTP and other projects in this region have potential to affect the entire watershed, as opposed to affecting only a smaller geographic area or subwatershed, the Santa Clara River Watershed defines the impact area for this cumulative effects analysis.

9.3 PRESENT AND REASONABLY FORESEEABLE ACTIONS

The cumulative effects analysis utilized a list of present and reasonable foreseeable projects within one-half mile radius of each Alternative. The list of projects include: 1) Electricity Transmission Projects; 2) Power Generation Projects; 3) Transportation and Public Facilities Projects; 4) Community Development Projects; 5) Recreation Projects; 6) Maintenance/Landscaping Projects; and 7) Local Development Projects. Any proposed or future project that would potentially preclude the use of, disturb, or diminish the function of a particular land use within this study area may contribute to a cumulative effect.

As the project list comprises projects in various stages of planning and development, it is likely that some of these projects would be completed as currently proposed while others would not. To be conservative, the cumulative analysis assumes that all projects listed would be built and in operation during the operating lifetime of the proposed Project.

9.3.1. Transmission Projects

Antelope Transmission Project – Construction of Southern California Edison's (SCE) proposed Antelope Transmission Project is underway and is proceeding in three sequential segments. Construction of Segments 1, 2 and 3A have been completed. Construction of Segment 3B, from Windhub Substation to and including Highwind Substation, has not started and no schedule has been developed by SCE (California Public Utilities – Current Projects).

Tehachapi Renewable Transmission Project (TRTP) – SCE is proposing to construct the TRTP, which would involve new and upgraded transmission infrastructure along 173 miles of new and existing rights-of-way, in southern Kern County, portions of Los Angeles County including the ANF, and the southwestern portion of San Bernardino County. Stated objectives for the project include providing the electrical facilities necessary to integrate levels of wind generation in excess of 700 MW and up to 4,500 MW in the Tehachapi Wind Resource Area (California Public Utilities – Current Projects).

The environmental review process for the project is currently underway. Construction began in April 2010 on approved sections. Project construction is estimated to be completed in 2015.

9.3.2. Transportation and Public Facilities

California High Speed Rail – This project proposes a ±700-mile high speed rail line from Sacramento to San Diego. The Statewide Programmatic EIS/EIR was completed in 2005, and the Bay Area to Central Valley High-Speed Train Program EIS/EIR was completed in 2008. Multiple second-tier project-level environmental documents (with preliminary engineering design) are currently underway (California High Speed Rail Authority).

Pacific Pipeline Storm Relocation Project and Access Road Repairs – Pacific Pipeline is proposing to relocate several miles of crude oil pipeline to more stable ground within the ANF. Project implementation was expected in November 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Soledad Canyon Cemex Project – The Soledad Canyon Cemex project would be a 56-million-ton sand and gravel mining project in the Soledad Canyon area. The BLM approved the project with mitigating measures in 2000, and the Interior Board of Land Appeals affirmed that decision in 2002. A City of Santa Clarita challenge to the US Supreme Court was denied in 2006. This project is pending development with ongoing challenges and delays (Cemex United States).

9.3.3. Maintenance and Landscape Management Projects

Bouquet Canyon Road Realignment – Los Angeles County Department of Public Works is proposing to straighten some sections of Bouquet Canyon Road and to raise the road surface by approximately nine feet. A Memorandum of Understanding between ANF and Los Angeles County is currently under development to initiate the project (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

San Francisquito Road Rehabilitation and Sediment Disposal Site – Los Angeles County Department of Public Works is proposing a road realignment and new bridge along San Francisquito Road within the ANF and to use eight acres of Forest land as a spoils site in support of construction activities. Public Scoping began in June 2007, and a decision was expected in September 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Old Ridge Route Storm Damage Repair – USFS is proposing to repair and provide maintenance to seven storm-damaged locations along the Old Ridge Route in ANF. A decision on the project is expected in late 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Tule Ridge/South Portal Fuels Reduction Project – USFS proposes fuels reduction and re-establishment of a fuel break to provide protection to unincorporated community of Green Valley. The project would also enhance wildlife for mammals and birds (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Jupiter Fuelbreak Project – USFS proposes to re-establish an existing fuel break that begins southwest of the unincorporated community of Green Valley and travels east, bisecting Jupiter Mountain, before heading south to Bouquet Reservoir.

Santa Clara/Mojave River Rangers District Plantation Maintenance Project – The proposed project would consist of vegetation maintenance at 13 plantations located within the ANF in order to reduce wildfire risk, and improve wildlife habitat and the vitality of individual remaining trees. Proposed actions include removal of dead trees, thinning of live trees, pruning, removing weeds, and planting for reforestation where necessary. This action was approved by the District Ranger in January 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Lake Hughes Plantation Restoration Project – The proposed project would restore unauthorized off-highway vehicle trails at the Christian and Taylor Plantations located within the ANF in order to reduce soil erosion, the spread of weeds, destruction of native plants, soil compaction, and wildlife habitat loss. Proposed actions include recontouring and decompacting soils, reseeding with native species, and reinforcing check dams. The project was approved by the District Ranger in 2009 and scheduled for implementation in January 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Bouquet and San Francisquito Habitat Improvement Project – The project proposes invasive species removal in Bouquet and San Francisquito Canyons (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

9.3.4. Local Projects

In conjunction with the major projects described above, foreseeable local projects that would potentially contribute to cumulative effects of the BRRTP watersheds were also reviewed. These proposed projects include single family residential projects, multifamily residential projects, schools, religious-related projects, public and recreational facilities, commercial and office development, hotels or motels, medical care center facilities, industrial facilities, animal facilities, and non-commercial energy facilities. These projects would be located in the following Los Angeles County Districts: Bouquet Canyon, Castaic Canyon, Leona Valley, Mount Gleason, Sand Canyon, and Soledad.

9.4 CUMULATIVE EFFECTS ANALYSIS

9.4.1. Direct and Indirect Effects Summary

Construction and operation of the BRRTP Alternatives would potentially impact water quality through ground-disturbing activities, including clearing and grading for structure installation work areas, and access construction.

Disturbed soils accelerate erosion and increase sediment in stormwater runoff to receiving waters, causing increased turbidity and sedimentation. Additionally, fuel, oil, and other fluids used in construction vehicles, equipment, and heavy machinery could enter streams and contaminate water. Project-related ground disturbance could potentially alter drainage patterns within the work areas and result in soil erosion leading to increased sedimentation or increase of the rate or amount of surface water runoff. Grading activities could also potentially create additional sources of runoff, including polluted runoff.

Dewatering during construction activities could potentially release contaminated groundwater to surface water channels or drainage features. Construction of the Project could also result in adversely impacting wetlands by removing or degrading wetland soils, damaging or removing wetland plants, or disrupting wetland hydrology. The Project would also result in placement of structures within a 100-year floodplain.

Many of the present and reasonably foreseeable projects described above involve grading activities, including large-scale grading activities that would continue for years after the BRRTP is completed. These projects would have potential to affect the impact area by altering drainage patterns, accelerating erosion, and adding additional sediment to local drainages.

Compacted or new paved areas, including railroad beds, would potentially increase the rate or amount of stormwater runoff, or create additional sources of stormwater runoff. Polluted runoff could be introduced to the impact area as oil products collect on new paved surfaces and are washed into the system with stormwater runoff. Projects using improper dewatering procedures could release contaminated groundwater into drainages within the impact area.

Along the foothills and drainages of the San Andreas Rift Zone, and within the ANF are Palustrine Emergent (PEM), Palustrine Scrub-Shrub (PSS), and Palustrine Forested (PFO) wetlands that could be filled by at least one project, and could be impacted by altered soils, vegetation, or hydrology resulting from other projects.

Most of the projects described above would cross or be located within FEMA 100-year floodplains, and would place structures within a 100-year floodplain, potentially impeding or redirecting flood flows.

9.4.2. Cumulative Effects Evaluation

Whenever multiple activities at a single site, or activities at multiple sites, produce similar or complementary changes to environmental parameters or watershed processes, the resulting impacts can be cumulatively significant, even if they are individually insignificant. For example, soil compaction resulting from construction vehicles driving over a natural surface decreases pore space and collapses conduits between pores, reducing soil porosity and permeability, and increasing runoff rates, which causes erosion. Likewise, replacement of natural surfaces with impermeable material allows a high stormwater runoff ratio and increases both peak flows and total flow volume. Removal of topsoil, which leaves mineral soil exposed, also increases the rate of stormwater flow, which in turn creates more erosion (Reid 1993). Increased and eroding stormwater flows carry increased sediment load into drainages, which increases turbidity. When these processes are occurring at multiple sites, sediment load can increase turbidity such that water temperature can increase, which in turn decreases the level of dissolved oxygen, which can lead to increased stress or death of aquatic animals.

Polluted stormwater runoff could introduce petroleum products or pathogens, or otherwise alter water chemistry, including pH levels. Runoff from multiple sources could lead to water quality impacts that exceed water quality objective thresholds. In addition, some introduced chemicals can alter the mobility or chemical composition of chemicals already present, and may contribute to nutrient deficiencies or inhibit the ability of plants to make use of available nutrients. Introduced chemicals may be deposited within streams, and repeated addition of chemicals may cause a cumulative increase in concentration (Reid 1993).

When topography is altered for construction purposes, the change in natural contours can change local and downstream hydrology. Altered hydrology can decrease water availability to wetlands, which would impact wetland plant populations and eventually create upland conditions. Altered hydrology can also modify the timing and amount of storm runoff, which could change base flows, peak flows, and flood seasonality. In response to these changes, flood frequencies could change, stream channels could be aggraded, incised, or widened, and the size distribution of streambed sediment would be modified (Reid 1993). These effects would not be limited to the physical environment, but would also affect wetland and riparian plant populations and aquatic animal populations. Changes in flood frequency and distribution could also affect human populations.

Impacts that are individually less than significant are cumulatively significant if they contribute incrementally to a cumulative impact that is already significant. For example, if a project results in sedimentation impacts that are less than significant on a project-level basis, the cumulative impact from sedimentation can be significant if the sediment is released into a stream that has not yet recovered from previous sedimentation impacts. Potential impacts to water resources resulting from construction and operation of the BRRTP may be less than significant; however, even with implementation of USFS BMPs, mitigation measures, and GPs, they would have a cumulative effect on the watersheds in which they occur as they add to the impacts of past and contemporary projects, and as the impacts of future projects are added to them. While Project-level BMPs, mitigation measures, and GPs are not sufficient to negate cumulative watershed effects, effectively implemented they are an important component of a broader watershed-scale approach to recovery from human activities.

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APPENDIX A: RUSLE ANALYSIS

March 2010

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

RUSLE Analysis Report

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Barren Ridge Renewable Transmission Project

RUSLE Analysis Report

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TABLE OF CONTENTS

1.0 INTRODUCTION 1
2.0 METHODOLOGY 1
3.0 RESULTS AND DISCUSSION 4
4.0 REFERENCES 9

TABLES

Table 1. NLCD Codes and Vegetation Classes Adjusted by Burn Year 2
Table 2. C-factor Values 3
Table 3. RUSLE Erosion Results for Alternative 1 6
Table 4. RUSLE Erosion Results for Alternative 2 6
Table 5. RUSLE Erosion Results for Alternative 3 6

FIGURES

Figure 1. Baseline RUSLE Erosion Model Results and Associated Hydrologic Units 5

1.0 INTRODUCTION

The City of Los Angeles Department of Water and Power (LADWP) is proposing the Barren Ridge Renewable Transmission Project (BRRTP or Project) to access clean, renewable resources in the Tehachapi Mountain and Mojave Desert areas. The Project is approximately 76 miles in length, beginning at the Barren Ridge Switching Station to Rinaldi Substation, and extends approximately 12 miles from the Castaic Power Plant to the proposed Haskell Switching Station. The proposed BRRTP includes the following:

1) Construction of approximately 61 miles of a 230 kilovolt (kV) double-circuit transmission line from the LADWP Barren Ridge Switching Station to Haskell Canyon;
2) Addition of approximately 12 miles of a 230 kV circuit on the existing double-circuit structures from Haskell Canyon to the Castaic Power Plant;
3) Upgrade of approximately 76 miles of the existing Barren Ridge-Rinaldi (BR-RIN) 230 kV transmission line with larger capacity conductors between the Barren Ridge Switching Station and the Rinaldi Substation;
4) Construction of a new electrical switching station in Haskell Canyon;
5) Expansion of the existing Barren Ridge Switching Station.

Portions of each of the three Project alternative routes would cross through the Angeles National Forest. Temporary impacts would occur where ground is disturbed for equipment staging and line work, and where construction access would be needed. Permanent impacts would result from ground disturbance required for upgrading the existing access roads and spur roads, and clearing the right-of-way.

Initial analysis of Project-related impacts revealed the potential for impacts to water quality through erosion of disturbed soils, leading to increased sedimentation and turbidity of receiving waters within the Angeles National Forest. At the request of the U.S. Forest Service (USFS), POWER Engineers, Inc. has prepared a watershed analysis to predict erosion rates (tons/acre/year) that would potentially result from construction of the alternative transmission line routes in the Angeles National Forest. This analysis allows for the comparison of potential impacts on sensitive aquatic habitat and species, and beneficial uses of waters from construction of the alternative routes within the Angeles National Forest.

2.0 METHODOLOGY

Following consultation with Mr. Paul Gregory, Hydrologist for the Angeles National Forest, the Revised Universal Soil Loss Equation, Version 2 (RUSLE) was selected to predict annual erosion from Project-related ground disturbance. The RUSLE model was run using ESRI ArcGIS 9.3.1 software. The RUSLE model predicts long-term average annual soil loss expressed in tons per acre per year (A), and is determined by the product of five factors:

$$A = R \cdot K \cdot LS \cdot C \cdot P$$

where:

A = Estimated soil loss in tons per acre per year
R = Rainfall-erosivity factor
K = Soil erodibility factor
LS = Slope length and slope steepness factor
C = Land cover management factor
P = Erosion control practice factor

The R factor represents the erosivity due to rainfall at a particular location. An average annual value of R is determined from historical weather records using erosivity values determined from individual storms, computed as the average annual sum of EI_{30}, where E is total storm kinetic energy and I_{30} is the maximum 30-minute storm intensity. The R factor accounts for both the intensity and amount of rainfall. This analysis used 4-kilometer resolution data acquired from the Natural Resource Conservation Service (NRCS) National Water and Climate Center in Portland, Oregon. This data was then converted to a 10-meter grid for calculation purposes.

The K factor represents the susceptibility of a soil to sheet and rill erosion by water. The estimates are based primarily on percentage of silt, sand, and organic matter, and on soil structure and saturated hydraulic conductivity (Ksat). For example, silt soils generally have the highest K values because silt soil particles detach easily and the sediment is easily transported. Soils with high clay content have the lowest K values because clay soils are generally plastic and resistant to detachment. K factor values from Kern, Los Angeles, and Ventura county soils were assigned based on dominant component Soil Survey Geographic (SSURGO) data from the NRCS database. Within the study area, values of K range from 0.02 to 0.32. This data was then converted to a 10-meter grid for calculation purposes.

The LS factors represent the effects of topography on erosion. The L factor represents hillslope length and the S factor represents hillslope gradient. In general, soil loss increases with increased hillslope length and gradient. To calculate the LS factor, 10-meter digital elevation model data was obtained from USGS. An automated program, RUSLE_LS_4_PC (Van Remortel *et. al*. 2007) was used to account for changes in slope from cell to cell by using a slope cut-off factor for ending/beginning slope length cumulation. For this analysis, the default cutoff values were used; a cutoff factor of 0.7 feet was used for slopes of less than five percent, and a cutoff factor of 0.5 feet was used for slopes greater than or equal to five percent.

The C factor represents the effects of land cover; specifically, the effects of vegetative cover, soil cover, soil biomass (roots and incorporated residue), and soil-disturbing activities on erosion. The C value is the average soil loss ratio weighted by the distribution of rainfall (EI) during the year. This study used a National Land Cover Dataset (NLCD) adjusted with wildfire perimeter data. The NLCD data was adjusted for both the base level RUSLE model and the proposed Project RUSLE model, to account for fires within the last 10 years. Fire data was incorporated based on the year of the burn and changing cover classes within burn areas based on the number of years since the burn occurred (see Table 1).

TABLE 1. NLCD CODES AND VEGETATION CLASSES ADJUSTED BY BURN YEAR

Burn Year	Adjusted NLCD Code and Vegetation Cover Class
2009	31 – Barren Land (Rock/Sand/Clay)
2008	31 – Barren Land (Rock/Sand/Clay)
2007	71 – Grassland/Herbaceous
2006	71 – Grassland/Herbaceous
2005	71 – Grassland/Herbaceous
2004	71 – Grassland/Herbaceous
2003	71 – Grassland/Herbaceous
2002	52 – Scrub/Shrub
2001	52 – Scrub/Shrub
2000	52 – Scrub/Shrub
1999	52 – Scrub/Shrub

Areas where fires occurred recently (2008 and 2009) were given a vegetation cover class of "barren land" since the fires had consumed all vegetation covers and soils were exposed. Over time, these areas begin to recover, with establishment of grasses and herbaceous vegetation, followed by scrub/shrub or woody vegetation providing increased soil cover and stability.

Data for areas within the Angeles National Forest indicates that annual erosion rates during the first year after a burn are 30 times greater than baseline levels. The second year after a burn, erosion rates decrease to 10 times baseline followed by seven times greater the third year, five times greater the fourth year, four times greater the fifth year, three times greater the sixth year, and two times greater the seventh year. By eight to ten years following the burn, the area has typically recovered to baseline levels (Rowe *et. al.* 1949).

For analysis of erosion resulting from the Project, C values were adjusted based on Project-related changes (*e.g.*, road construction or improvement of existing roads). The NLCD was modified for each proposed alternative where roads would require improvement. Roads requiring improvement were buffered by five meters, and underlying values (one 10-meter grid cell) were designated "barren land." Based on RUSLE2 software, RUSLE calculation procedure manuals, correlation tables, and approximate ranges from previous analyses, NLCD codes were correlated and converted to C values, as shown in Table 2. The adjusted C values were then converted to a 10-meter grid.

TABLE 2. C-FACTOR VALUES

C Factor	NLCD Code Number	Description
0	11	Open Water
0.01	21	Developed Open Space
0.01	22	Developed, Low Intensity
0.02	23	Developed, Medium Intensity
0.03	24	Developed, High Intensity
0.3	31	Barren Land
0.003	41	Deciduous Forest
0.003	42	Evergreen Forest
0.003	43	Mixed Forest
0.06	52	Scrub/Shrub
0.05	71	Grassland/Herbaceous
0.02	81	Pasture/Hay
0.09	82	Cultivated Crops
0.0003	90	Woody Wetlands
0.0006	95	Emergent Herbaceous Wetlands

The P factor represents the influence of control practices, such as contour farming, terracing, diversions, or sediment- and erosion-control best management practices (BMPs) that reduce the erosion potential of stormwater runoff. Although the P factor can be modified to account for construction disturbance and associated effectiveness of mitigation features, this variable was held constant throughout this analysis. Assignment of P values for specific disturbance and BMPs is impractical for an analysis of this scale. For an analysis of this scale, using a constant value of P is considered a conservative approach if the total area modified with increased land use factors (C factor) due to construction is overestimated. This is the case with this analysis, since C factor values were assigned in 10-meter grid increments.

Given the scale of the study area, specific data regarding implementation of erosion- and sediment-control BMPs were not included in this analysis ($P = 1$), and predicted post-construction erosion values do not reflect effects of BMP implementation. In actuality, erosion- and sediment-control BMPs and mitigation measures would be implemented throughout the Project and would reduce the potential for erosion and sedimentation.

The boundary of the watershed study area was delineated using twelve-digit/6th level hydrologic units encompassing the alternative routes within the Angeles National Forest. All data was clipped to this study area before running the RUSLE analyses.

3.0 RESULTS AND DISCUSSION

The study area encompasses 333,135 acres of highly varied terrain within the Angeles National Forest. The study area was divided according to watersheds affected by routing alternatives of the Project. The watersheds evaluated in this assessment are 6th level subwatersheds (12-digit hydrologic unit codes [HUCs]) ranging from approximately 11,409 acres to 38,533 acres and elevations of approximately 960 feet to 3,550 feet. Using the RUSLE model, baseline annual erosion rates (tons/acre/year) were estimated for each subwatershed affected by the alternative routes (Alternatives 1, 2, and 3) as shown in Figure 1. Four subwatersheds within the study area would not be affected by the BRRTP alternatives: Elizabeth Lake Canyon (180701020304), Fish Creek-Piru Creek (180701020602), Fish Canyon (180701020302), and Upper Bouquet Canyon (180701020201).

Once baseline values were estimated, the change in annual erosion rates (tons/acre/year) was estimated for each subwatershed as a result of construction of the alternative routes (*e.g.*, vegetation clearing related to road construction). Using these results, the increase of erosion from baseline conditions was calculated.

Alternative 1 would affect eight subwatersheds with a combined area of 191,957 acres. Sensitive aquatic species within these subwatersheds are arroyo toad (*Anaxyrus californicus*), California red-legged frog (*Rana draytonii*), and the Santa Ana sucker (*Catostomus santaanae*). As detailed in Table 3, estimated average baseline annual erosion level for these subwatersheds is 48.15 tons/acre/year. With construction of Alternative 1, predicted average erosion levels would be 48.43 tons/acre/year, and increase of 0.68 percent over baseline conditions. Of the eight subwatersheds, Liebre Gulch-Piru Creek would have the largest potential increase (2.26 percent) over baseline conditions from construction of Alternative 1.

Alternative 2 would affect three subwatersheds with a combined area of 65,172 acres. Sensitive aquatic species within these subwatersheds are the arroyo toad and the California red-legged frog. As detailed in Table 4, estimated average baseline annual erosion level for these subwatersheds is 43.93 tons/acre/year. With construction of Alternative 2, predicted average annual erosion would be approximately 44.43 tons/acre/year, an increase of 1.18 percent over baseline. Of the three subwatersheds, Elizabeth Lake would have the largest potential increase (1.59 percent) over baseline conditions from construction of Alternative 2.

Alternative 3 would affect three subwatersheds with a combined area of 76,006 acres. Sensitive aquatic species within these subwatersheds are the arroyo toad, California red-legged frog, and the Santa Ana sucker. Estimated average baseline annual erosion level for these subwatersheds is 35.42 tons/acre/year. As detailed in Table 5, with construction of Alternative 3, predicted average annual erosion would be 35.82 tons/acre/year, an increase of 1.35 percent over baseline. Of the three subwatersheds, Agua Dulce Canyon would have the largest potential increase (2.04 percent) over baseline conditions from construction of Alternative 3.

FIGURE 1. BASELINE RUSLE EROSION MODEL RESULTS AND ASSOCIATED HYDROLOGIC UNITS

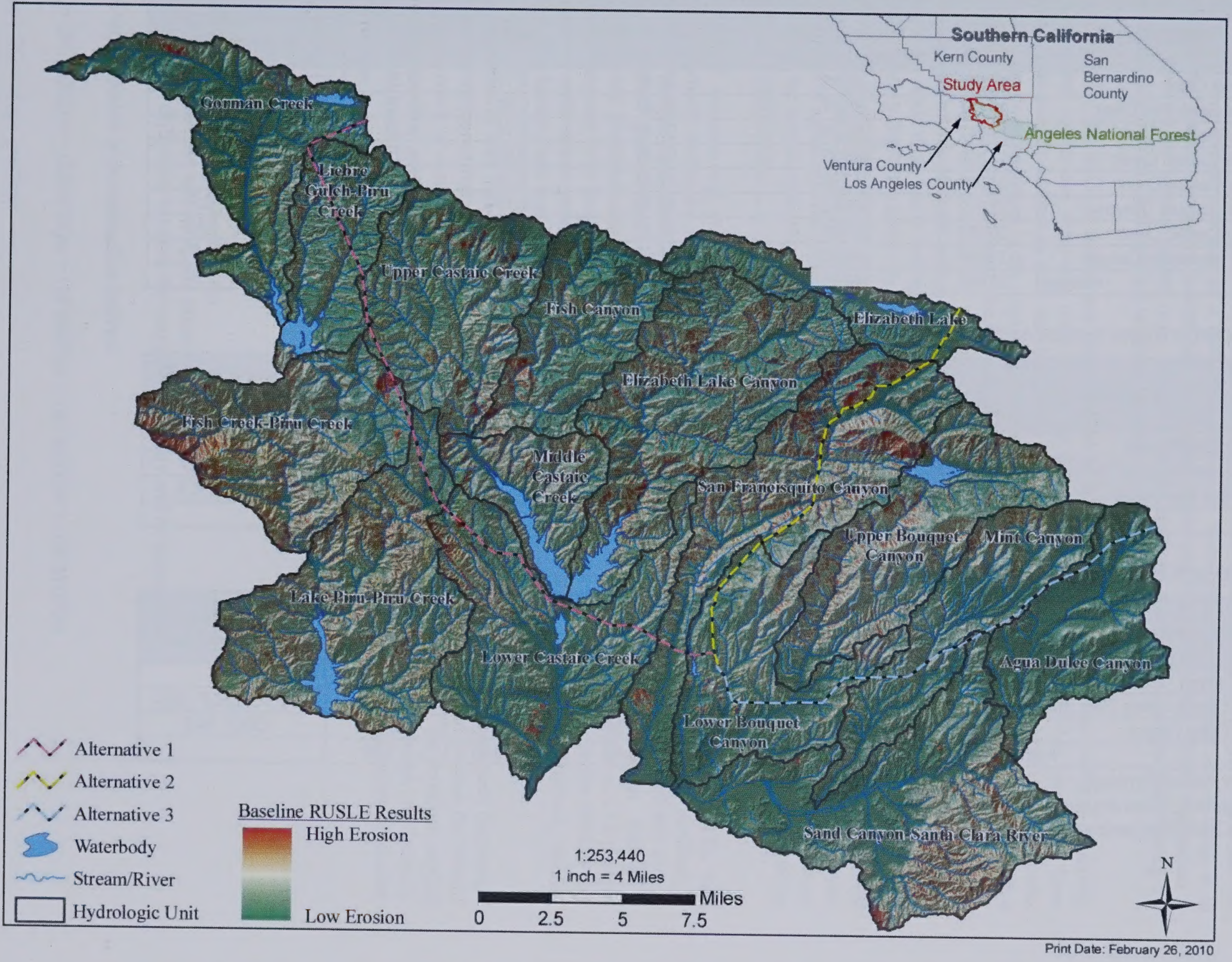
Southern California
Kern County
San Bernardino County
Study Area
Angeles National Forest
Ventura County
Los Angeles County
Gorman Creek
Liebre Gulch-Piru Creek
Upper Castaic Creek
Fish Canyon
Elizabeth Lake
Elizabeth Lake Canyon
Fish Creek-Piru Creek
Middle Castaic Creek
San Francisquito Canyon
Upper Bouquet Canyon
Mint Canyon
Lake Piru-Piru Creek
Lower Castaic Creek
Agua Dulce Canyon
Lower Bouquet Canyon
Sand Canyon-Santa Clara River
Alternative 1
Alternative 2
Alternative 3
Waterbody
Stream/River
Hydrologic Unit
Baseline RUSLE Results
High Erosion
Low Erosion
1:253,440
1 inch = 4 Miles
Miles
0
2.5
5
7.5
N
Print Date: February 26, 2010

TABLE 3. RUSLE EROSION RESULTS FOR ALTERNATIVE 1

HUC NUMBER	HUC12 NAME	AREA (ACRES)	BASE AVERAGE ANNUAL EROSION (TONS/ACRE/YEAR)	PROJECT AVERAGE ANNUAL EROSION (TONS/ACRE/YEAR)	CHANGE	INCREASE OVER BASE (%)	SENSITIVE SPECIES WITHIN THIS HUC
180701020507	Gorman Creek	23,544	29.36	29.47	0.11	0.36	–
180701020509	Liebre Gulch-Piru Creek	14,137	35.27	36.07	0.80	2.26	ARTO
180701020603	Lake Piru-Piru Creek	34,242	66.26	66.40	0.14	0.21	ARTO
180701020305	Middle Castaic Creek	11,920	55.25	55.68	0.42	0.77	ARTO
180701020303	Upper Castaic Creek	24,059	47.35	47.47	0.12	0.24	ARTO
180701020202	Lower Bouquet Canyon	22,072	39.93	40.10	0.17	0.41	ARTO, CRLF
180701020306	Lower Castaic Creek	30,292	41.85	42.32	0.47	1.13	ARTO, CRLF. SAS
180701020402	San Francisquito Canyon	31,691	69.93	69.97	0.03	0.05	ARTO, CRLF
	Average	23,995	48.15	48.43	0.28	0.68	

TABLE 4. RUSLE EROSION RESULTS FOR ALTERNATIVE 2

HUC NUMBER	HUC12 NAME	AREA (ACRES)	BASE AVERAGE ANNUAL EROSION (TONS/ACRE/YEAR)	PROJECT AVERAGE ANNUAL EROSION (TONS/ACRE/YEAR)	CHANGE	INCREASE OVER BASE (%)	SENSITIVE SPECIES WITHIN THIS HUC
180701020301	Elizabeth Lake	11,409	21.93	22.28	0.35	1.59	–
180701020202	Lower Bouquet Canyon	22,072	39.93	40.24	0.31	0.77	ARTO, CRLF
180701020402	San Francisquito Canyon	31,691	69.93	70.76	0.83	1.18	ARTO, CRLF
	Average	21,724	43.93	44.43	0.50	1.18	

TABLE 5. RUSLE EROSION RESULTS FOR ALTERNATIVE 3

HUC NUMBER	HUC12 NAME	AREA (ACRES)	BASE AVERAGE ANNUAL EROSION (TONS/ACRE/YEAR)	PROJECT AVERAGE ANNUAL EROSION (TONS/ACRE/YEAR)	CHANGE	INCREASE OVER BASE (%)	SENSITIVE SPECIES WITHIN THIS HUC
180701020106	Mint Canyon	18,661	39.05	39.79	0.74	1.89	–
180701020107	Sand Canyon-Santa Clara River	38,533	47.69	47.75	0.05	0.11	ARTO, CRLF, SAS
180701020104	Agua Dulce Canyon	18,812	19.51	19.91	0.40	2.04	CRLF, SAS
	Average	25,335	35.42	35.82	0.40	1.35	

ARTO = Arroyo toad (*Anaxyrus californicus*)
CRLF = California red-legged frog (*Rana draytonii*)
SAS = Santa Ana sucker (*Catostomus santaanae*)

Rates of erosion are dependent on scale. Smaller watersheds at higher elevations tend to have higher predicted rates of erosion than larger watersheds at lower elevations. In the Angeles National Forest, smaller watersheds generally have steeper slopes and greater relief, tend to receive a greater amount of precipitation than lower-lying watersheds, and are flushed more readily by storm runoff. Vegetation also plays a role in erosion, acting as a biological barrier by intercepting precipitation and causing it to dissipate its kinetic energy on leaves and other plant structures (Howard 1982). When vegetation is removed, either by natural means (*e.g.*, wildfires) or by artificial means (*e.g.*, vegetative clearing for construction purposes), soils are left relatively open to erosive influences.

Traditionally, the RUSLE model has been applied to agricultural lands where the cover is relatively uniform and slopes are relatively level. Since its development, use of the RUSLE model has been extended to predict erosion in such non-traditional settings as construction sites, reclaimed mine spoils, and erosion on steep slopes in the tropics. In non-traditional settings where the RUSLE model generates a value for A of > 20 tons/acre/year, the expected accuracy rate is ± 35 percent (Yoder *et. al*. 2001).

The purpose of this analysis was not to calculate a precise quantity of sediment delivered to catchments within the study area, but to use the predicted volumes of soil loss to qualitatively compare the erosional effects of each BRRTP alternative route within the Angeles National Forest. In this respect, the predicted magnitude of change between pre- and post-project erosion, and between each alternative, is more useful to planners than a precise prediction of sediment delivered to a given outlet. The results of this analysis will allow for a side-by-side comparison of potential impacts from erosion resulting from each alternative, and allow for a more specific assessment of Project-related potential impacts to sensitive aquatic species within the study areas.

A RUSLE analysis was conducted for the Tehachapi Renewable Transmission Project (TRTP), also located partially within the Angeles National Forest (SCE 2009). Fourteen catchments were modeled in the TRTP analysis; catchment areas ranged from 1,879 acres to 55,471 acres (average area 19,989 acres), and predicted post-project annual erosion levels ranged between 3.6 tons/acre/year and 31.5 tons/acre/year. Predicted annual erosion increase over base values ranged from 0.4 percent to 13.0 percent (average increase over base was 4.06 percent). Predicted erosion increases predicted for the BRRTP are consistent with values predicted for the TRTP, especially considering similarities in terrain, rainfall levels, fire history, and vegetation cover between the two study areas.

It is important to note that the predicted rates of erosion do not reflect the amount of sediment that would be transported out of the watersheds; rather, the predicted values are an estimation of erosion that would occur as a result of construction and operation of the BRRTP. In actuality, much of the sediment eroded from construction areas and roads would be redeposited before leaving the watershed. A Spatially Explicit Sediment Delivery Model (SEDMOD) would be required to predict the quantity of eroded material that leaves the watersheds as sediment.

SEDMOD is expressed as follows:

$$\mathrm{SDR} = 39\ \mathrm{A}^{-1/8} + \Delta\mathrm{DP}$$

Where SDR = sediment delivery ratio
A = watershed area in square kilometers
ΔDP = difference between the composite delivery and its mean value

Delivery Potential is determined as follows:

$$\mathrm{DP} = (\mathrm{SG})\mathrm{r}(\mathrm{SG})\mathrm{w} + (\mathrm{SS})\mathrm{r}(\mathrm{SS})\mathrm{w} + (\mathrm{SP})\mathrm{r}(\mathrm{SP})\mathrm{w} + (\mathrm{ST})\mathrm{r}(\mathrm{ST})\mathrm{w} + (\mathrm{OF})\mathrm{r}(\mathrm{OF})\mathrm{w}$$

Where SG = slope gradient
SS = slope shape

SR = surface roughness
SP = stream proximity
ST = soil texture
OF = overland flow index
r = parameter rating (1 – 100)
w = weighting factor (0 – 1)

Once gross soil loss and sediment delivery ratio are determined, sediment load is estimated as follows:

$SY = A \cdot SDR$

Where SY = Sediment Yield
A = Gross Soil Loss
SDR = Sediment Delivery Ratio

SEDMOD modeling was outside the scope of this analysis; however, SEDMOD modeling using RUSLE analysis results for the TRTP watersheds estimated that only 10 percent of the predicted annual erosion would reach the catchment outlets as sediment (SCE 2009). Taking into account the similarities of topography, soils, and watershed areas between the TRTP and the BRRTP study areas, it is reasonable to expect similar predicted sediment delivery values for the BRRTP study area.

It is also important to note that, due to the scale of this analysis, the predicted post-Project erosion values do not reflect implementation of BMPs or mitigation measures. Where site conditions are modeled assuming implementation of BMPs, RUSLE erosion predictions are from 52 percent to 93 percent lower than without BMP implementation (Wachal *et. al*. 2008).

The post-Project erosion rates predicted in this analysis represent a worst-case scenario in which no BMPs or mitigation measures are implemented and all eroded material leaves the study area as sediment. The BRRTP would implement appropriate erosion- and sediment-control BMPs and mitigation measures throughout all stages of construction. Furthermore, the model reflects erosion rates within the first year after construction, and does not account for natural revegetation. Assuming the more conservative estimate of 52 percent reduction in erosion rates, implementation of erosion- and sediment-control BMPs and mitigation measures would reduce average predicted post-Project erosion rates in Alternative 1 to 48.30 tons/acre/year, in Alternative 2 to 44.18 tons/acre /year and in Alternative 3 to 35.63 tons/acre/year. Increases in erosion rates over base would average 0.33 percent in Alternative 1, in Alternative 2 to 0.58 percent, and in Alternative 3 to 0.64 percent.

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APPENDIX B: STUDIED WATERSHED MAPS

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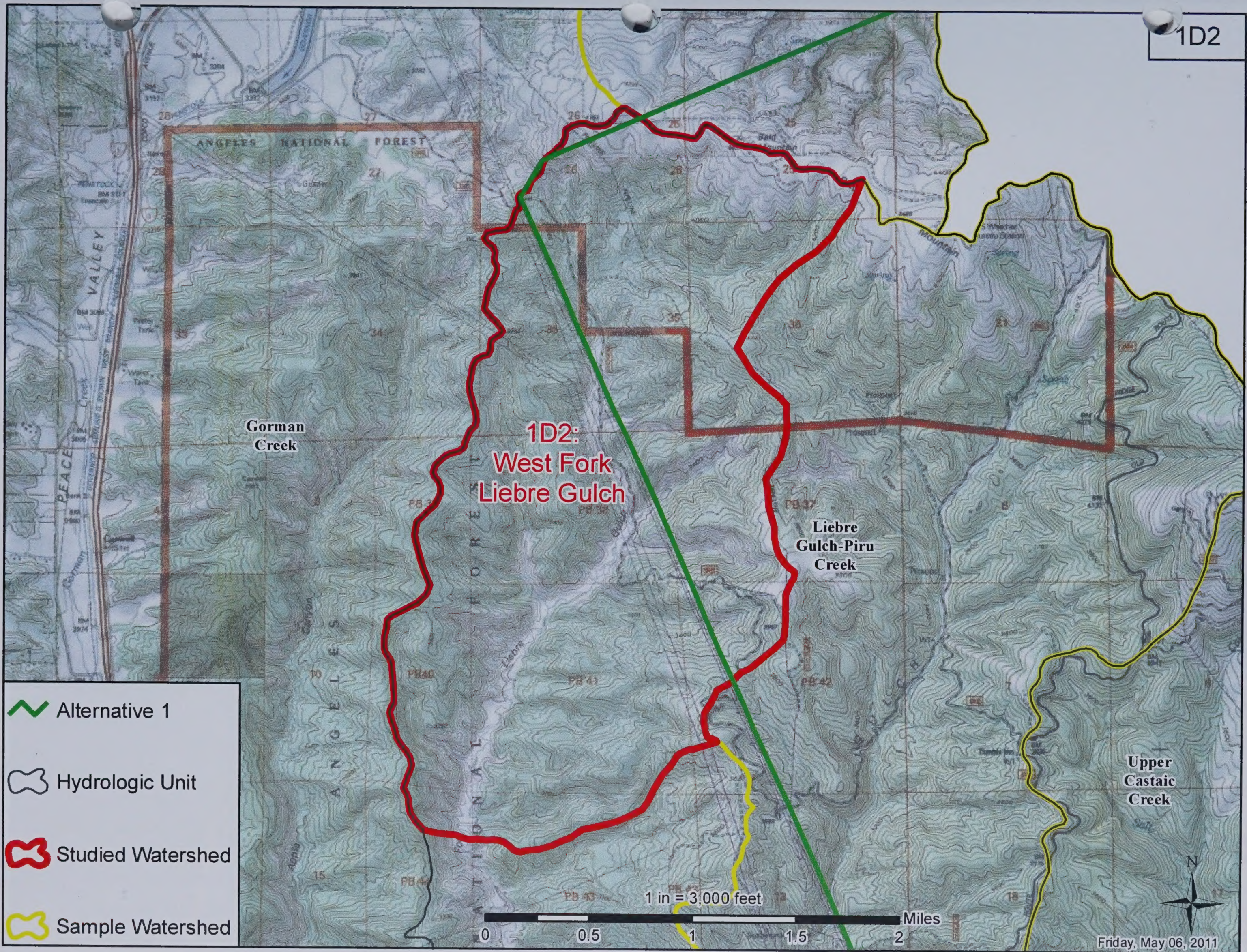
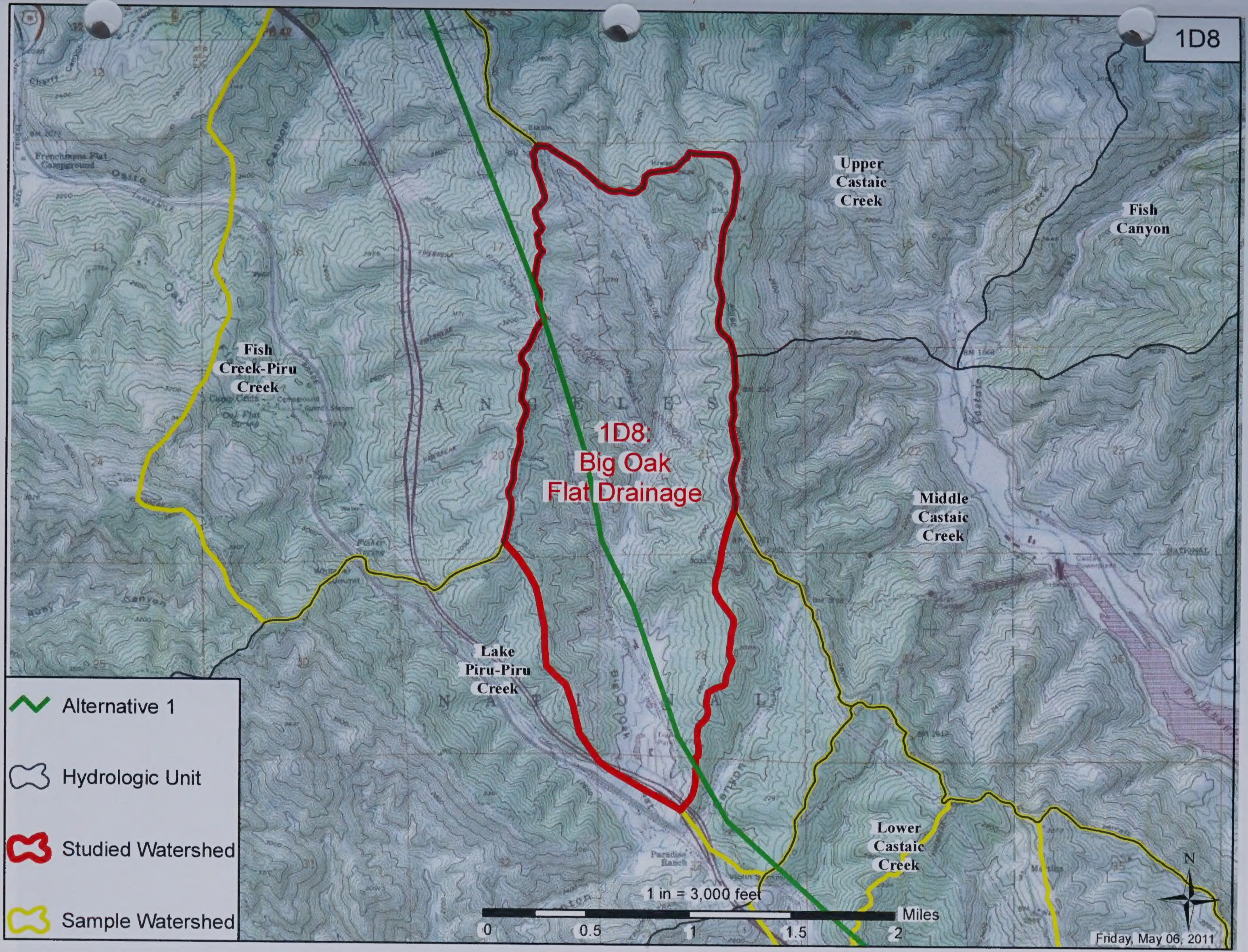
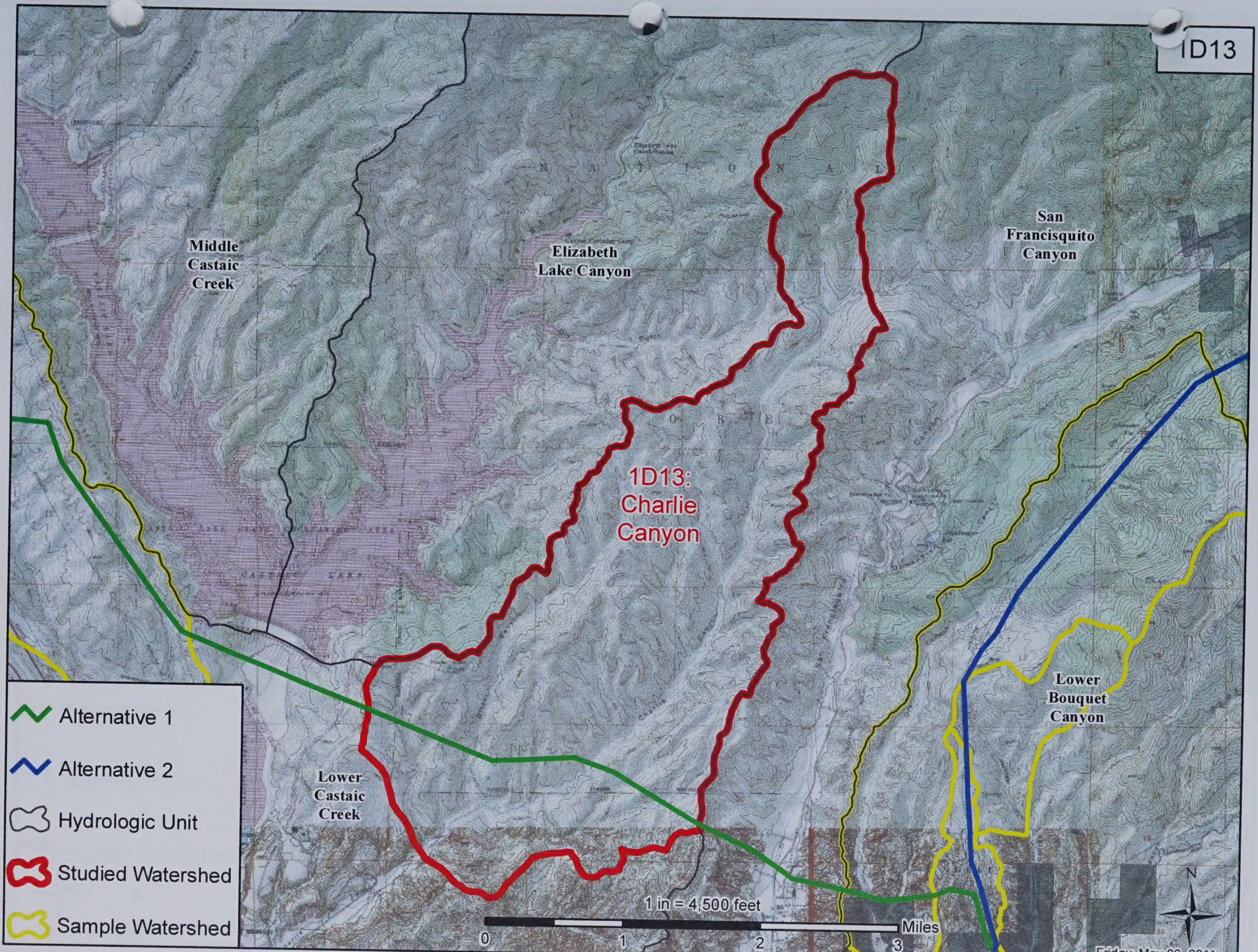
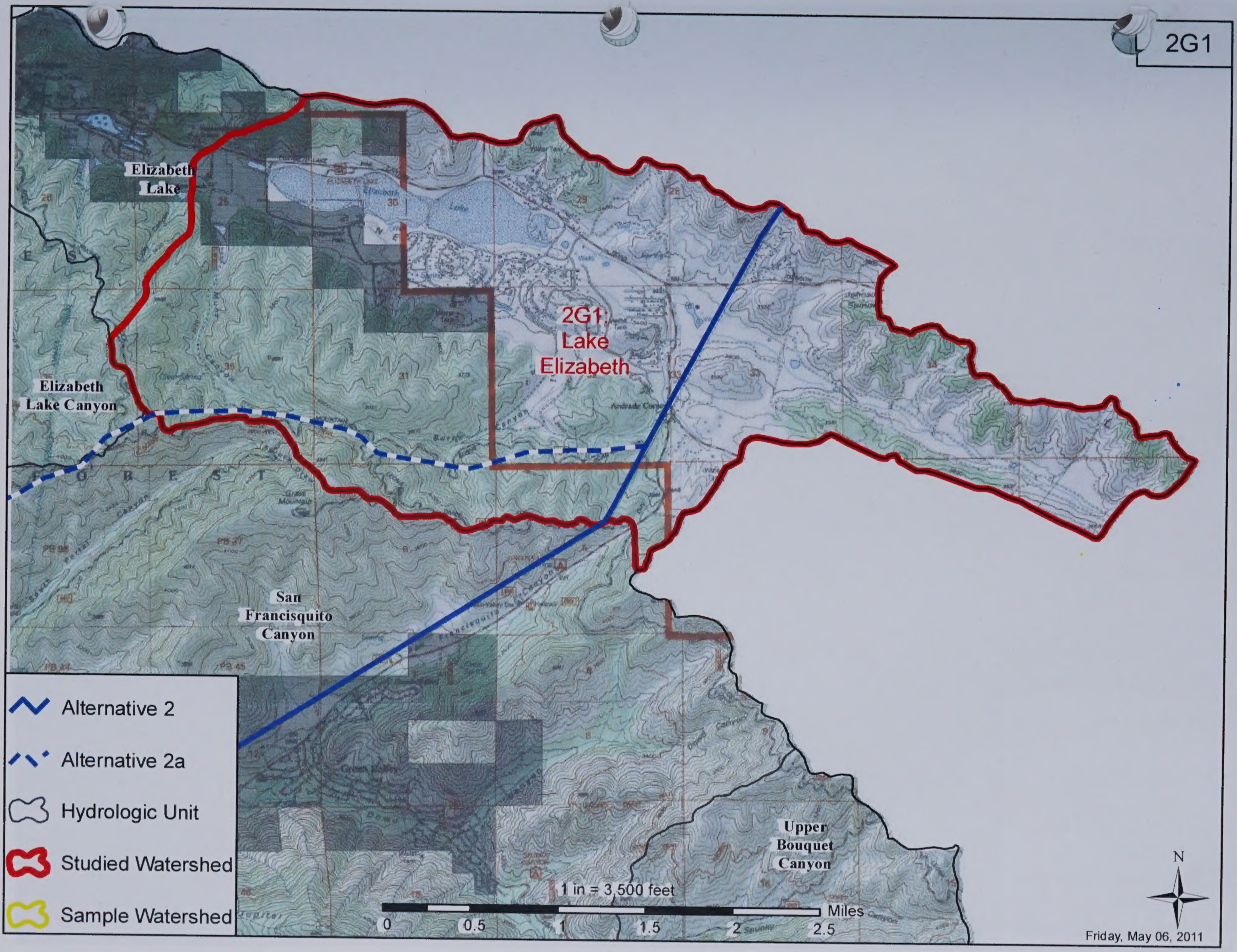

1D2
ANGELES NATIONAL FOREST
PEACE VALLEY
Gorman Creek
1D2:
West Fork
Liebre Gulch
Liebre Gulch-Piru Creek
Upper Castaic Creek
Alternative 1
Hydrologic Unit
Studied Watershed
Sample Watershed
1 in = 3,000 feet
0
0.5
1
1.5
2
Miles
N
Friday, May 06, 2011

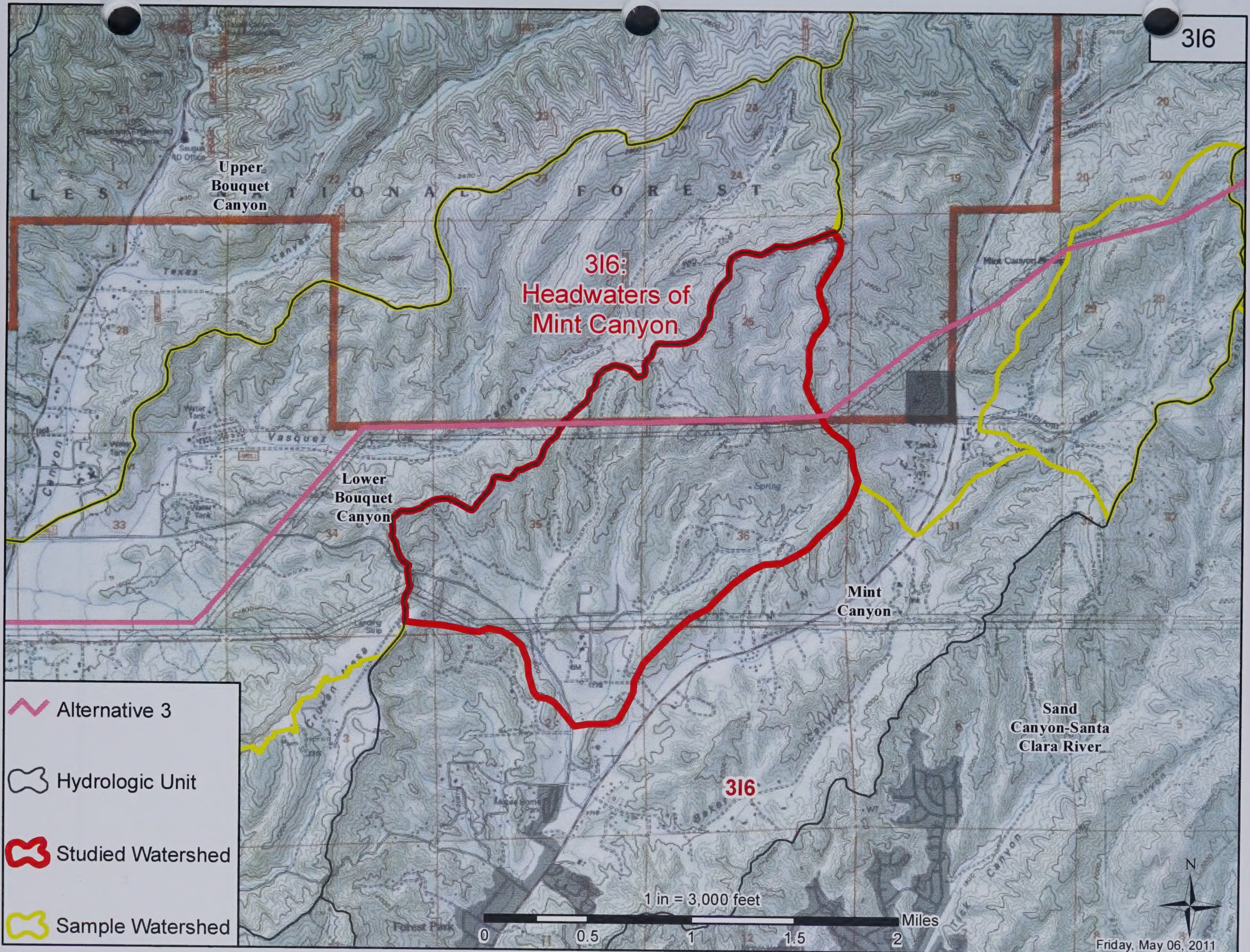

1D8
1D8:
Big Oak
Flat Drainage
Upper
Castaic
Creek
Fish
Canyon
Fish
Creek-Piru
Creek
Middle
Castaic
Creek
Lake
Piru-Piru
Creek
Lower
Castaic
Creek
Alternative 1
Hydrologic Unit
Studied Watershed
Sample Watershed
1 in = 3,000 feet
0
0.5
1
1.5
2
Miles
N
Friday, May 06, 2011


1D13
Middle Castaic Creek
Elizabeth Lake Canyon
San Francisquito Canyon
1D13: Charlie Canyon
Lower Castaic Creek
Lower Bouquet Canyon
Alternative 1
Alternative 2
Hydrologic Unit
Studied Watershed
Sample Watershed
1 in = 4,500 feet
0
1
2
3
Miles
N

Friday, May 06, 2011


2G1
Elizabeth Lake
2G1: Lake Elizabeth
Elizabeth Lake Canyon
San Francisquito Canyon
Upper Bouquet Canyon
Alternative 2
Alternative 2a
Hydrologic Unit
Studied Watershed
Sample Watershed
1 in = 3,500 feet
0
0.5
1
1.5
2
2.5
Miles
N

Friday, May 06, 2011


316
316: Headwaters of Mint Canyon
Upper Bouquet Canyon
LES TIONAL FOREST
Lower Bouquet Canyon
Mint Canyon
Sand Canyon-Santa Clara River
316
Alternative 3
Hydrologic Unit
Studied Watershed
Sample Watershed
1 in = 3,000 feet
0
0.5
1
1.5
2
Miles
N
Friday, May 06, 2011

APPENDIX C: ASSUMPTIONS AND RESULTS

- Calculation Assumptions
- West Fork Liebre Gulch (1D2) Model Results
- Big Oak Flat (1D8) Model Results
- Charlie Canyon (1D13) Model Results
- Lake Elizabeth (2G1) Model Results
- Unnamed Tributary of Mint Canyon (3I6) Model Results

Calculation Assumptions

General

Land Use

Conversion Table

Dirt Access Road	Impervious, Column C
Barren Land (fire)	Arid and SemiArid Rangelands, Herbaceous, Fair condition
Cultivated Crops	Cultivated Agricultural Lands, Row Crop, Straight Row, Good
Developed, Med Intensity	Residential Districts (by average lot size), 1/3 acre
Developed, OpenSp & Low Inten	Residential Districts (by average lot size), 1/2 acre
Em Herbaeous Wetlands	Impervious, Column D
Evergreen & Mixed Forest	Arid and SemiArid Rangelands, Pinyon - Juniper, Fair condition
Shrub & Scrub	Arid and SemiArid Rangelands, Sagebrush (w/grass understory), Fair condition
Water	Impervious, Column D
Woody Wetlands	Impervious, Column D

Acreage Adjustments

Four out of the five watersheds required small acreage adjustments so that the pre- and post-construction areas were equal. The differences are due to GIS processing (merging and intersecting on the outside of polygon layers. To account for these quickly, impervious area was added to Post-construction acreages in the Impervious category (Column A), or subtracted from the Scrub and Shrub area.

Time of Concentration

100 feet of Sheet flow
100 feet of Shallow concentrated
Channel velocity of 4 feet/second

Precipitation Data

Precipitation data was obtained using the following interactive website, http://dipper.nws.noaa.gov/hdsc/pfds/
A point close to the center of the watershed was chosen for the analysis.

Watershed Specific

West Fork Liebre Gulch (1D2)

0.07 Acreage adjustment, added to Post-Construction Impervious, Column A

Big Oak Flat (1D8)

0.32 Acreage adjustment, added to Post-Construction Impervious, Column A

Charlie Canyon (1D13)

Combined A & B into B for Shrub/Scrub and Pinyon/Juniper due to lack of A column
3.89 Acreage adjustment, added to Post-Construction Impervious, Column A

Lake Elizabeth (2G1)

Water and Wetlands Combined
All acreage placed in 'C' soil column to fit within winTR-55 number of cover types limitations
0.49 Acreage adjustment, subtracted from Pre-Construction Shrub/Scrub, Column A

West Fork Liebre Gulch (1D2)
Model Results

West Fork Liebre Gulch (1D2) Model Results

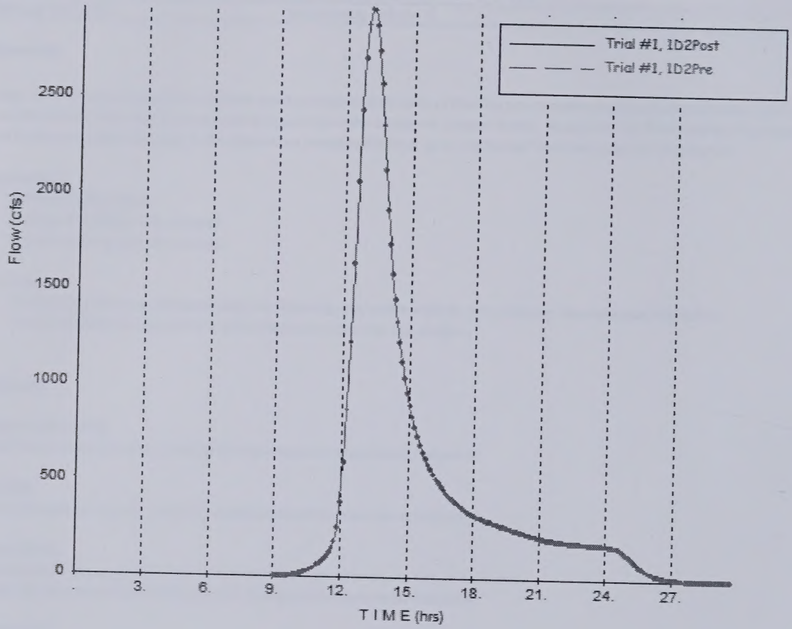
WinTR-55 Output Hydrograph

Project: Barren Ridge

Subareas: (1D2Post, 1D2Pre) Storm: 25-Yr

D:\TR55Approach3\1D2_Post.w55

4/28/2011



West Fork Liebre Gulch (1D2) Model Results

```
                       WinTR-55 Current Data Description

                         --- Identification Data ---


User:      MWY                                     Date:         4/28/2011
Project:   Barren Ridge                            Units:        English
SubTitle:  Select Watershed Study                  Areal Units:  Acres
State:     California
County:    Los Angeles
Filename:  D:\TR55Approach3\1D2_Post.w55


                             --- Sub-Area Data ---


Name           Description              Reach         Area(ac)     RCN     Tc
------------------------------------------------------------------------------
1D2Post       Post-Construction        Outlet          3246.24      72    1.949
1D2Pre        Pre-Construction         Outlet          3246.24      72    1.949

Total area: 6492.48 (ac)


                             --- Storm Data  --

                   Rainfall Depth by Rainfall Return Period

   2-Yr        5-Yr        10-Yr       25-Yr       50-Yr       100-Yr      1-Yr
   (in)        (in)        (in)        (in)        (in)        (in)        (in)
--------------------------------------------------------------------------------
   2.93        3.89        4.66        5.71        6.52        7.33         2.2


Storm Data Source:              User-provided custom storm data
Rainfall Distribution Type:     Type II
Dimensionless Unit Hydrograph:  <standard>
```

West Fork Liebre Gulch (1D2) Model Results

```
MWY
                              Barren Ridge
                         Select Watershed Study
                     Los Angeles County, California

                               Storm Data

                  Rainfall Depth by Rainfall Return Period

   2-Yr        5-Yr        10-Yr       25-Yr       50-Yr       100-Yr      1-Yr
   (in)        (in)        (in)        (in)        (in)        (in)        (in)
--------------------------------------------------------------------------------
   2.93        3.89        4.66        5.71        6.52        7.33        2.2

Storm Data Source:               User-provided custom storm data
Rainfall Distribution Type:      Type II
Dimensionless Unit Hydrograph:   <standard>
```

West Fork Liebre Gulch (1D2) Model Results

```
MWY                                 Barren Ridge
                               Select Watershed Study
                           Los Angeles County, California

                                Watershed Peak Table

 Sub-Area              Peak Flow by Rainfall Return Period
 or Reach  ANALYSIS:      5-Yr      10-Yr     25-Yr     50-Yr     100-Yr      1-Yr
Identifier    (cfs)      (cfs)      (cfs)     (cfs)     (cfs)      (cfs)      (cfs)
----------------------------------------------------------------------------------
SUBAREAS
1D2Post       721.69    1412.44    2045.04   2965.15   3725.51   4496.90    310.16

1D2Pre        721.69    1412.44    2045.04   2965.15   3725.51   4496.90    310.16


REACHES

OUTLET       1443.38    2824.87    4090.09   5930.29   7451.01   8993.79    620.33
```

West Fork Liebre Gulch (1D2) Model Results

```
MWY
                              Barren Ridge
                         Select Watershed Study
                      Los Angeles County, California

                      Hydrograph Peak/Peak Time Table

 Sub-Area        Peak Flow and Peak Time (hr) by Rainfall Return Period
 or Reach  ANALYSIS:      5-Yr      10-Yr      25-Yr      50-Yr     100-Yr       1-Yr
Identifier     (cfs)     (cfs)      (cfs)      (cfs)      (cfs)      (cfs)      (cfs)
              (hr)       (hr)       (hr)       (hr)       (hr)       (hr)       (hr)
----------------------------------------------------------------------------------
SUBAREAS
1D2Post       721.69    1412.44    2045.04    2965.15    3725.51    4496.90     310.16
             13.19      13.13      13.19      13.07      13.14      13.13      13.30

1D2Pre        721.69    1412.44    2045.04    2965.15    3725.51    4496.90     310.16
             13.19      13.13      13.19      13.07      13.14      13.13      13.30


REACHES

OUTLET       1443.38    2824.87    4090.09    5930.29    7451.01    8993.79     620.33
```

West Fork Liebre Gulch (1D2) Model Results

```
MWY                               Barren Ridge
                             Select Watershed Study
                         Los Angeles County, California

                             Sub-Area Summary Table

 Sub-Area   Drainage     Time of     Curve  Receiving     Sub-Area
Identifier    Area    Concentration  Number   Reach      Description
              (ac)        (hr)
--------------------------------------------------------------------------------
1D2Post      3246.24      1.949        72     Outlet    Post-Construction
1D2Pre       3246.24      1.949        72     Outlet    Pre-Construction

Total Area:   6492.48 (ac)
```

West Fork Liebre Gulch (1D2) Model Results

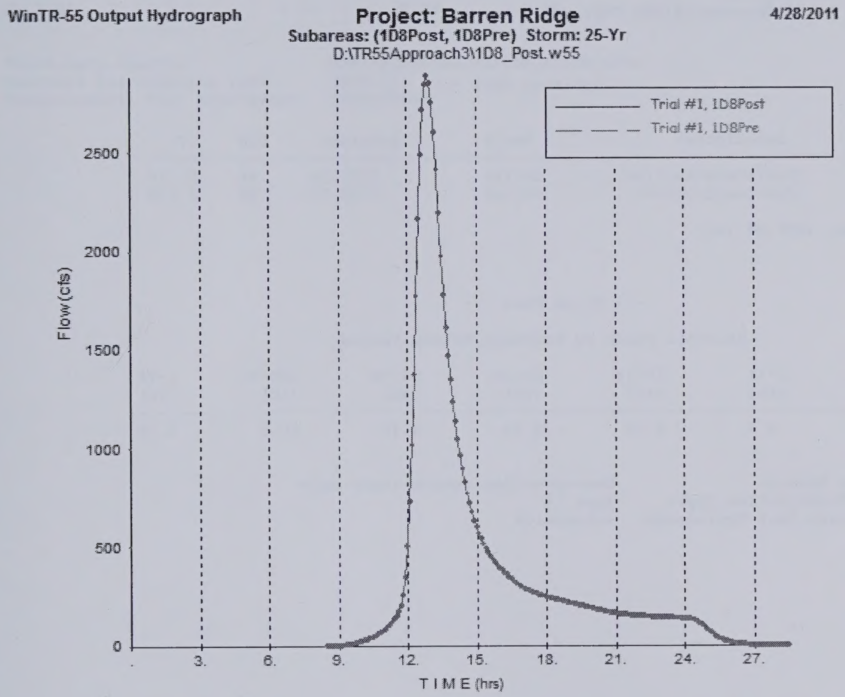
```
MWY
                              Barren Ridge
                         Select Watershed Study
                       Los Angeles County, California

                    Sub-Area Time of Concentration Details

 Sub-Area      Flow               Mannings's     End      Wetted                 Travel
Identifier/   Length    Slope         n         Area     Perimeter   Velocity     Time
               (ft)    (ft/ft)                 (sq ft)     (ft)      (ft/sec)     (hr)
---------------------------------------------------------------------------------------
1D2Post
  SHEET          100   0.0630      0.400                                          0.236
  SHALLOW        100   0.0630      0.050                                          0.007
  CHANNEL      24569                                                   4.000      1.706

                                           Time of Concentration                 1.949
                                                                                ========

1D2Pre
  SHEET          100   0.0630      0.400                                          0.236
  SHALLOW        100   0.0630      0.050                                          0.007
  CHANNEL      24569                                                   4.000      1.706

                                           Time of Concentration                 1.949
                                                                                ========
```

West Fork Liebre Gulch (1D2) Model Results

```
MWY                                    Barren Ridge
                                  Select Watershed Study
                              Los Angeles County, California

                        Sub-Area Land Use and Curve Number Details

 Sub-Area                                                 Hydrologic   Sub-Area   Curve
Identifier          Land Use                                 Soil        Area     Number
                                                             Group       (ac)
-------------------------------------------------------------------------------------
1D2Post    Paved parking lots, roofs, driveways                A           .07      98
           Paved parking lots, roofs, driveways                C        27.565      98
           Residential districts (1/2 acre)                    C        18.033      80
           Residential districts (1/2 acre)                    D        54.247      85
           Herbaceous                              (fair)      C         55.16      81
           Herbaceous                              (fair)      D       114.841      89
           Pinyon - juniper                        (fair)      C         3.652      73
           Pinyon - juniper                        (fair)      D        319.73      80
           Sagebrush (w/ grass understory)         (fair)      C       190.713      63
           Sagebrush (w/ grass understory)         (fair)      D      2462.228      70

           Total Area / Weighted Curve Number                          3246.24      72
                                                                       =======      ==

1D2Pre     Residential districts (1/2 acre)                    C        18.092      80
           Residential districts (1/2 acre)                    D        55.235      85
           Herbaceous                              (fair)      C        56.072      81
           Herbaceous                              (fair)      D       115.822      89
           Pinyon - juniper                        (fair)      C         3.998      73
           Pinyon - juniper                        (fair)      D       320.195      80
           Sagebrush (w/ grass understory)         (fair)      C       192.464      63
           Sagebrush (w/ grass understory)         (fair)      D      2484.365      70

           Total Area / Weighted Curve Number                          3246.24      72
                                                                       =======      ==
```

Big Oak Flat (1D8)
Model Results

Big Oak Flat (1D8) Model Results



Big Oak Flat (1D8) Model Results

```
                         WinTR-55 Current Data Description

                            --- Identification Data ---

User:      MWY
Project:   Barren Ridge                               Date:         4/28/2011
SubTitle:  Select Watershed Study                     Units:        English
State:     California                                 Areal Units:  Acres
County:    Los Angeles
Filename:  D:\TR55Approach3\1D8_Post.w55


                              --- Sub-Area Data ---

Name          Description              Reach         Area(ac)      RCN      Tc
--------------------------------------------------------------------------------
1D8Post       Post-Construction        Outlet         1732.54       66    1.578
1D8Pre        Pre-Construction         Outlet         1732.54       66    1.578

Total area: 3465.08 (ac)


                              --- Storm Data  --

                  Rainfall Depth by Rainfall Return Period

  2-Yr       5-Yr       10-Yr      25-Yr      50-Yr      100-Yr     1-Yr
  (in)       (in)       (in)       (in)       (in)       (in)       (in)
---------------------------------------------------------------------------
  4.36       5.7        6.79       8.29       9.44       10.6       3.34

Storm Data Source:              User-provided custom storm data
Rainfall Distribution Type:     Type II
Dimensionless Unit Hydrograph:  <standard>
```

Big Oak Flat (1D8) Model Results

```
MWY                             Barren Ridge
                           Select Watershed Study
                       Los Angeles County, California

                                 Storm Data

                  Rainfall Depth by Rainfall Return Period

   2-Yr        5-Yr        10-Yr       25-Yr       50-Yr       100-Yr      1-Yr
   (in)        (in)        (in)        (in)        (in)        (in)        (in)
--------------------------------------------------------------------------------
   4.36        5.7         6.79        8.29        9.44        10.6        3.34

Storm Data Source:             User-provided custom storm data
Rainfall Distribution Type:    Type II
Dimensionless Unit Hydrograph: <standard>
```

Big Oak Flat (1D8) Model Results

```
MWY
                              Barren Ridge
                         Select Watershed Study
                     Los Angeles County, California

                          Watershed Peak Table

 Sub-Area              Peak Flow by Rainfall Return Period
 or Reach  ANALYSIS:     5-Yr     10-Yr     25-Yr     50-Yr    100-Yr      1-Yr
Identifier    (cfs)     (cfs)     (cfs)     (cfs)     (cfs)     (cfs)     (cfs)
---------------------------------------------------------------------------------
SUBAREAS
1D8Post      802.72   1451.87   2029.61   2889.44   3572.42   4276.85    392.87

1D8Pre       802.72   1451.87   2029.61   2889.44   3572.42   4276.85    392.87


REACHES

OUTLET      1605.44   2903.74   4059.22   5778.87   7144.84   8553.70    785.74
```

Big Oak Flat (1D8) Model Results

```
MWY                                 Barren Ridge
                               Select Watershed Study
                           Los Angeles County, California

                          Hydrograph Peak/Peak Time Table

 Sub-Area       Peak Flow and Peak Time (hr) by Rainfall Return Period
 or Reach  ANALYSIS:       5-Yr      10-Yr      25-Yr      50-Yr     100-Yr       1-Yr
Identifier     (cfs)      (cfs)      (cfs)      (cfs)      (cfs)      (cfs)      (cfs)
             (hr)       (hr)       (hr)       (hr)       (hr)       (hr)       (hr)
-----------------------------------------------------------------------------------
SUBAREAS
1D8Post        802.72    1451.87    2029.61    2889.44    3572.42    4276.85     392.87
            12.91      12.88      12.94      12.87      12.88      12.89      13.00

1D8Pre         802.72    1451.87    2029.61    2889.44    3572.42    4276.85     392.87
            12.91      12.88      12.94      12.87      12.88      12.89      13.00


REACHES

OUTLET        1605.44    2903.74    4059.22    5778.87    7144.84    8553.70     785.74
```

Big Oak Flat (1D8) Model Results

```
MWY                               Barren Ridge
                              Select Watershed Study
                          Los Angeles County, California

                              Sub-Area Summary Table

 Sub-Area    Drainage     Time of      Curve   Receiving     Sub-Area
Identifier     Area    Concentration  Number     Reach      Description
               (ac)         (hr)
--------------------------------------------------------------------------------
1D8Post      1732.54      1.578         66     Outlet     Post-Construction
1D8Pre       1732.54      1.578         66     Outlet     Pre-Construction

Total Area:  3465.08 (ac)
```

Big Oak Flat (1D8) Model Results

```
MWY                               Barren Ridge
                             Select Watershed Study
                          Los Angeles County, California

                      Sub-Area Time of Concentration Details

 Sub-Area       Flow               Mannings's     End      Wetted              Travel
Identifier/    Length     Slope        n         Area     Perimeter  Velocity   Time
                (ft)     (ft/ft)                (sq ft)     (ft)     (ft/sec)   (hr)
---------------------------------------------------------------------------------------
1D8Post
  SHEET          100     0.0410      0.400                                      0.230
  SHALLOW        100     0.0410      0.050                                      0.009
  CHANNEL      19287                                                 4.000      1.339

                                                 Time of Concentration         1.578
                                                                             ========

1D8Pre
  SHEET          100     0.0410      0.400                                      0.230
  SHALLOW        100     0.0410      0.050                                      0.009
  CHANNEL      19287                                                 4.000      1.339

                                                 Time of Concentration         1.578
                                                                             ========
```

Big Oak Flat (1D8) Model Results

```
MWY                                Barren Ridge
                              Select Watershed Study
                          Los Angeles County, California

                     Sub-Area Land Use and Curve Number Details

 Sub-Area                                               Hydrologic  Sub-Area   Curve
Identifier           Land Use                              Soil       Area     Number
                                                           Group      (ac)
--------------------------------------------------------------------------------------
1D8Post   Paved parking lots, roofs, driveways              A          .32       98
          Paved parking lots, roofs, driveways              C        23.041      98
          Residential districts (1/3 acre)                  D         5.412      86
          Residential districts (1/2 acre)                  C         7.619      80
          Residential districts (1/2 acre)                  D         21.99      85
          Pinyon - juniper                     (fair)       C          .19       73
          Sagebrush (w/ grass understory)      (fair)       C      1040.012      63
          Sagebrush (w/ grass understory)      (fair)       D       633.956      70

          Total Area / Weighted Curve Number                        1732.54      66
                                                                    =======      ==

1D8Pre    Residential districts (1/3 acre)                  D         5.634      86
          Residential districts (1/2 acre)                  C         7.471      80
          Residential districts (1/2 acre)                  D        22.358      85
          Pinyon - juniper                     (fair)       C          .19       73
          Sagebrush (w/ grass understory)      (fair)       C      1055.688      63
          Sagebrush (w/ grass understory)      (fair)       D       641.201      70

          Total Area / Weighted Curve Number                        1732.54      66
                                                                    =======      ==
```

Charlie Canyon (1D13)
Model Results

Charlie Canyon (1D13) Model Results

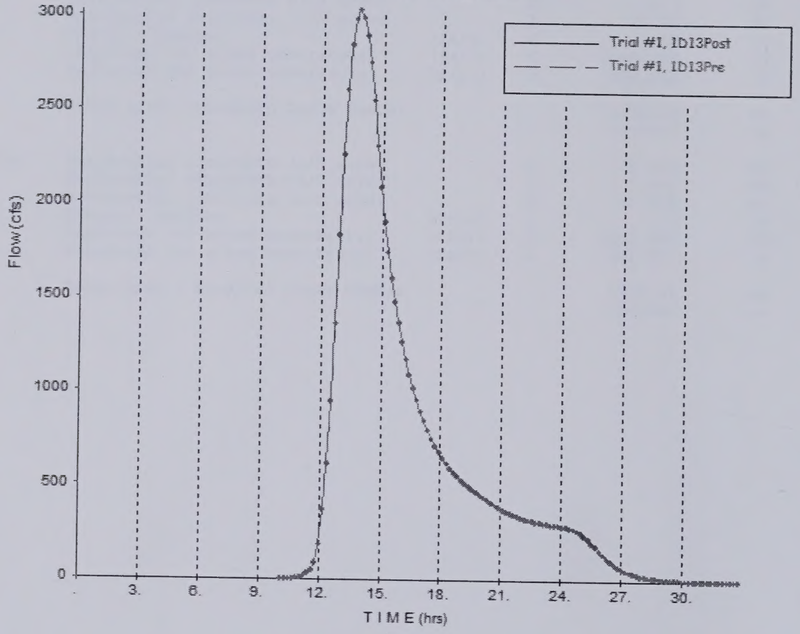
WinTR-55 Output Hydrograph

Project: Barren Ridge

Subareas: (1D13Post, 1D13Pre) Storm: 25-Yr

D:\TR55Approach3\1D13_Post.w55

4/28/2011



Charlie Canyon (1D13) Model Results

```
                        WinTR-55 Current Data Description

                          --- Identification Data ---

User:      MWY                                       Date:         4/28/2011
Project:   Barren Ridge                              Units:        English
SubTitle:  Select Watershed Study                    Areal Units:  Acres
State:     California
County:    Los Angeles
Filename:  D:\TR55Approach3\1D13_Post.w55


                              --- Sub-Area Data ---

Name           Description              Reach        Area(ac)     RCN     Tc
--------------------------------------------------------------------------------
1D13Post       Post-Construction        Outlet        5473.15      67    2.935
1D13Pre        Pre-Construction         Outlet        5473.15      67    2.935

Total area: 10946.30 (ac)


                              --- Storm Data  --

                     Rainfall Depth by Rainfall Return Period

   2-Yr        5-Yr        10-Yr       25-Yr       50-Yr       100-Yr      1-Yr
   (in)        (in)        (in)        (in)        (in)        (in)        (in)
----------------------------------------------------------------------------------
   2.96        3.91        4.68        5.75        6.57        7.42        2.25

Storm Data Source:               User-provided custom storm data
Rainfall Distribution Type:      Type II
Dimensionless Unit Hydrograph:   <standard>
```

Charlie Canyon (1D13) Model Results

```
MWY                              Barren Ridge
                            Select Watershed Study
                        Los Angeles County, California

                                  Storm Data

                     Rainfall Depth by Rainfall Return Period

     2-Yr        5-Yr        10-Yr       25-Yr       50-Yr       100-Yr      1-Yr
     (in)        (in)        (in)        (in)        (in)        (in)        (in)
--------------------------------------------------------------------------------
     2.96        3.91        4.68        5.75        6.57        7.42        2.25

Storm Data Source:             User-provided custom storm data
Rainfall Distribution Type:    Type II
Dimensionless Unit Hydrograph: <standard>
```

Charlie Canyon (1D13) Model Results

```
MWY                                Barren Ridge
                              Select Watershed Study
                          Los Angeles County, California

                               Watershed Peak Table

 Sub-Area              Peak Flow by Rainfall Return Period
 or Reach  ANALYSIS:     5-Yr      10-Yr      25-Yr      50-Yr      100-Yr      1-Yr
Identifier    (cfs)      (cfs)      (cfs)      (cfs)      (cfs)      (cfs)      (cfs)
-------------------------------------------------------------------------------------
SUBAREAS
1D13Post      601.23    1291.60    1964.44    3029.11    3884.04    4824.02     230.48

1D13Pre       601.23    1291.60    1964.44    3029.11    3884.04    4824.02     230.48


REACHES

OUTLET       1202.46    2583.19    3928.89    6058.22    7768.09    9648.04     460.96
```

Charlie Canyon (1D13) Model Results

```
MWY                               Barren Ridge
                            Select Watershed Study
                        Los Angeles County, California

                         Hydrograph Peak/Peak Time Table

 Sub-Area        Peak Flow and Peak Time (hr) by Rainfall Return Period
 or Reach  ANALYSIS:      5-Yr      10-Yr     25-Yr      50-Yr     100-Yr       1-Yr
Identifier     (cfs)     (cfs)     (cfs)     (cfs)      (cfs)      (cfs)      (cfs)
            (hr)      (hr)      (hr)      (hr)       (hr)       (hr)       (hr)
---------------------------------------------------------------------------------------
SUBAREAS
1D13Post      601.23   1291.60   1964.44   3029.11   3884.04   4824.02    230.48
           14.06     13.99     13.96     13.82     13.73     13.71     14.21

1D13Pre       601.23   1291.60   1964.44   3029.11   3884.04   4824.02    230.48
           14.06     13.99     13.96     13.82     13.73     13.71     14.21


REACHES

OUTLET       1202.46   2583.19   3928.89   6058.22   7768.09   9648.04    460.96
```

Charlie Canyon (1D13) Model Results

```
MWY                                Barren Ridge
                              Select Watershed Study
                          Los Angeles County, California

                              Sub-Area Summary Table

 Sub-Area   Drainage     Time of      Curve  Receiving     Sub-Area
Identifier    Area    Concentration  Number    Reach      Description
              (ac)        (hr)
--------------------------------------------------------------------------------
1D13Post     5473.15      2.935        67     Outlet    Post-Construction
1D13Pre      5473.15      2.935        67     Outlet    Pre-Construction

Total Area:   10946.30 (ac)
```

Charlie Canyon (1D13) Model Results

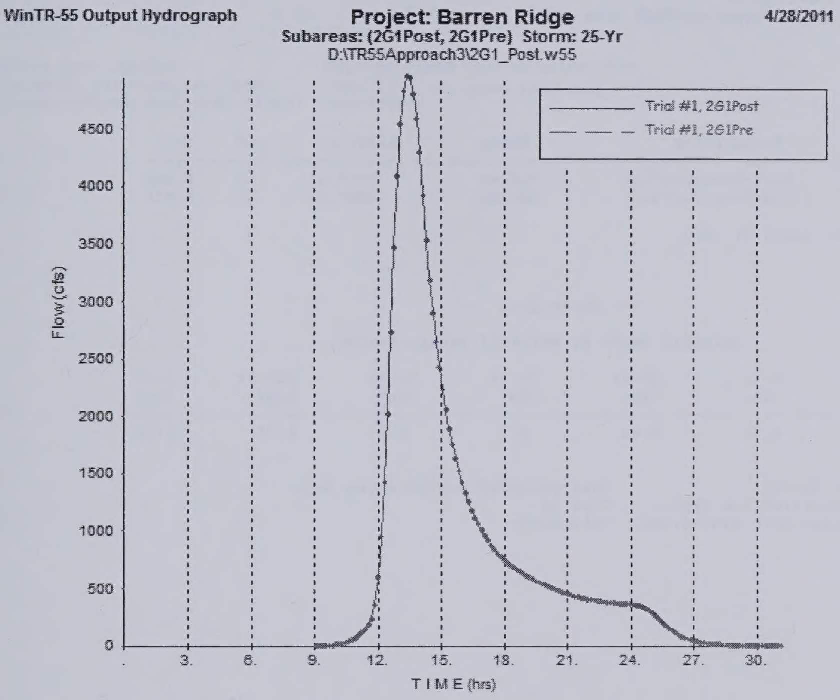
```
MWY
                                   Barren Ridge
                             Select Watershed Study
                          Los Angeles County, California

                      Sub-Area Time of Concentration Details

 Sub-Area      Flow               Mannings's    End      Wetted                Travel
Identifier/   Length     Slope        n         Area    Perimeter   Velocity    Time
               (ft)     (ft/ft)               (sq ft)     (ft)      (ft/sec)    (hr)
---------------------------------------------------------------------------------------
1D13Post
  SHEET          100    0.0580     0.400                                        0.243
  SHALLOW        100    0.0580     0.050                                        0.007
  CHANNEL      38668                                                 4.000      2.685

                                                  Time of Concentration         2.935
                                                                             ========

1D13Pre
  SHEET          100    0.0580     0.400                                        0.243
  SHALLOW        100    0.0580     0.050                                        0.007
  CHANNEL      38668                                                 4.000      2.685

                                                  Time of Concentration         2.935
                                                                             ========
```

Charlie Canyon (1D13) Model Results

```
MWY                                Barren Ridge
                              Select Watershed Study
                          Los Angeles County, California

                      Sub-Area Land Use and Curve Number Details

 Sub-Area                                             Hydrologic   Sub-Area    Curve
Identifier          Land Use                             Soil        Area      Number
                                                        Group        (ac)
-------------------------------------------------------------------------------------
1D13Post  Paved parking lots, roofs, driveways            A           3.89       98
          Paved parking lots, roofs, driveways            C          28.036      98
          Residential districts (1/2 acre)                A           4.254      54
          Residential districts (1/2 acre)                B          12.617      70
          Residential districts (1/2 acre)                C          15.638      80
          Residential districts (1/2 acre)                D          98.176      85
          Pinyon - juniper                       (fair)   B           7.25       58
          Pinyon - juniper                       (fair)   C            .06       73
          Pinyon - juniper                       (fair)   D          98.777      80
          Sagebrush (w/ grass understory)        (fair)   B         492.518      51
          Sagebrush (w/ grass understory)        (fair)   C        1468.421      63
          Sagebrush (w/ grass understory)        (fair)   D        3243.514      70

          Total Area / Weighted Curve Number                       5473.15       67
                                                                   =======       ==

1D13Pre   Residential districts (1/2 acre)                A           4.644      54
          Residential districts (1/2 acre)                B          12.797      70
          Residential districts (1/2 acre)                C          15.724      80
          Residential districts (1/2 acre)                D         100.636      85
          Pinyon - juniper                       (fair)   B           7.525      58
          Pinyon - juniper                       (fair)   C            .06       73
          Pinyon - juniper                       (fair)   D          99.519      80
          Sagebrush (w/ grass understory)        (fair)   B         497.205      51
          Sagebrush (w/ grass understory)        (fair)   C        1477.268      63
          Sagebrush (w/ grass understory)        (fair)   D        3257.768      70

          Total Area / Weighted Curve Number                       5473.15       67
                                                                   =======       ==
```

Lake Elizabeth (2G1)
Model Results

Lake Elizabeth (2G1) Model Results



Lake Elizabeth (2G1) Model Results

```
                     WinTR-55 Current Data Description

                       --- Identification Data ---


User:      MWY                                        Date:         4/28/2011
Project:   Barren Ridge                               Units:        English
SubTitle:  Select Watershed Study                     Areal Units:  Acres
State:     California
County:    Los Angeles
Filename:  D:\TR55Approach3\2G1_Post.w55


                           --- Sub-Area Data ---

Name           Description              Reach          Area(ac)      RCN     Tc
--------------------------------------------------------------------------------
2G1Post        Post-Construction        Outlet          5607.51      68     2.426
2G1Pre         Pre-Construction         Outlet          5607.51      68     2.426

Total area: 11215.02 (ac)


                           --- Storm Data  --

                 Rainfall Depth by Rainfall Return Period

   2-Yr        5-Yr        10-Yr       25-Yr       50-Yr       100-Yr      1-Yr
   (in)        (in)        (in)        (in)        (in)        (in)        (in)
---------------------------------------------------------------------------------
   3.28        4.45        5.41        6.7         7.7         8.72        2.39


Storm Data Source:             User-provided custom storm data
Rainfall Distribution Type:    Type II
Dimensionless Unit Hydrograph: <standard>
```

Lake Elizabeth (2G1) Model Results

```
MWY                             Barren Ridge
                           Select Watershed Study
                       Los Angeles County, California

                                 Storm Data

                  Rainfall Depth by Rainfall Return Period

   2-Yr         5-Yr        10-Yr        25-Yr        50-Yr       100-Yr        1-Yr
   (in)         (in)         (in)         (in)         (in)         (in)         (in)
--------------------------------------------------------------------------------
   3.28         4.45         5.41         6.7          7.7          8.72         2.39

Storm Data Source:              User-provided custom storm data
Rainfall Distribution Type:     Type II
Dimensionless Unit Hydrograph:  <standard>
```

Lake Elizabeth (2G1) Model Results

```
MWY
                              Barren Ridge
                         Select Watershed Study
                     Los Angeles County, California

                          Watershed Peak Table

  Sub-Area              Peak Flow by Rainfall Return Period
  or Reach  ANALYSIS:     5-Yr     10-Yr     25-Yr     50-Yr    100-Yr      1-Yr
 Identifier     (cfs)     (cfs)     (cfs)     (cfs)     (cfs)     (cfs)     (cfs)
----------------------------------------------------------------------------------
SUBAREAS
2G1Post       1037.36   2209.78   3334.12   4959.51   6320.51   7734.64    382.60

2G1Pre        1037.36   2209.78   3334.12   4959.51   6320.51   7734.64    382.60


REACHES

OUTLET        2074.72   4419.55   6668.24   9919.02  12641.03  15469.28    765.19
```

Lake Elizabeth (2G1) Model Results

```
MWY                              Barren Ridge
                            Select Watershed Study
                        Los Angeles County, California

                       Hydrograph Peak/Peak Time Table

 Sub-Area       Peak Flow and Peak Time (hr) by Rainfall Return Period
 or Reach  ANALYSIS:      5-Yr     10-Yr     25-Yr     50-Yr    100-Yr      1-Yr
Identifier     (cfs)     (cfs)     (cfs)     (cfs)     (cfs)     (cfs)     (cfs)
            (hr)      (hr)      (hr)      (hr)      (hr)      (hr)      (hr)
----------------------------------------------------------------------------------
SUBAREAS
2G1Post      1037.36   2209.78   3334.12   4959.51   6320.51   7734.64    382.60
           13.66     13.55     13.49     13.39     13.46     13.41     13.74

2G1Pre       1037.36   2209.78   3334.12   4959.51   6320.51   7734.64    382.60
           13.66     13.55     13.49     13.39     13.46     13.41     13.74


REACHES

OUTLET       2074.72   4419.55   6668.24   9919.02  12641.03  15469.28    765.19
```

Lake Elizabeth (2G1) Model Results

```
MWY
                              Barren Ridge
                         Select Watershed Study
                      Los Angeles County, California

                         Sub-Area Summary Table

 Sub-Area   Drainage     Time of      Curve  Receiving      Sub-Area
Identifier    Area    Concentration  Number    Reach       Description
              (ac)        (hr)
--------------------------------------------------------------------------------
2G1Post     5607.51      2.426         68     Outlet     Post-Construction
2G1Pre      5607.51      2.426         68     Outlet     Pre-Construction

Total Area:  11215.02 (ac)
```

Lake Elizabeth (2G1) Model Results

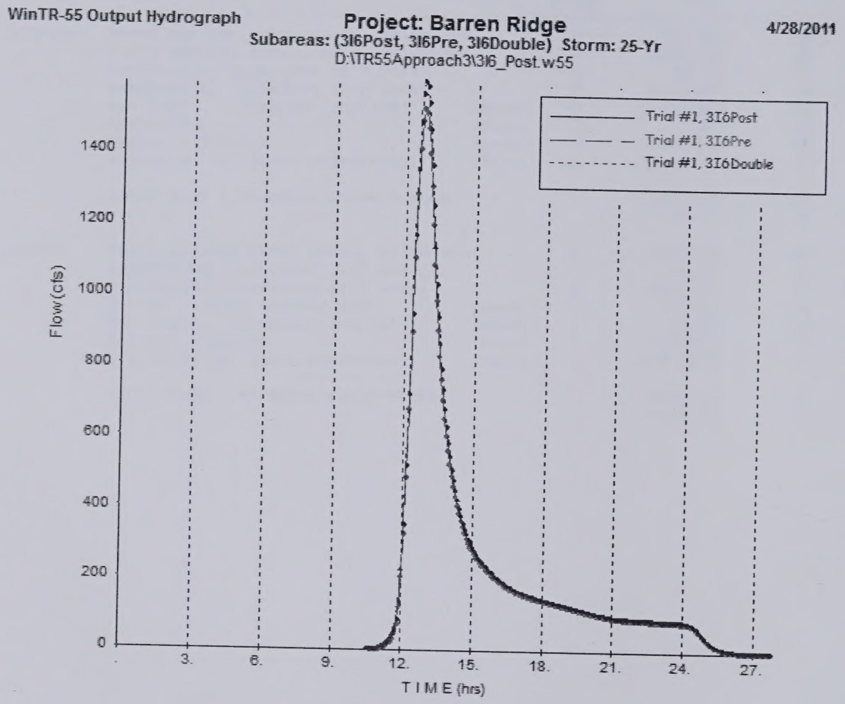
```
MWY                                Barren Ridge
                               Select Watershed Study
                            Los Angeles County, California

                         Sub-Area Time of Concentration Details

 Sub-Area       Flow               Mannings's    End     Wetted              Travel
Identifier/    Length    Slope        n          Area   Perimeter  Velocity   Time
                (ft)    (ft/ft)                (sq ft)    (ft)     (ft/sec)   (hr)
--------------------------------------------------------------------------------
2G1Post
  SHEET           100   0.0410     0.400                                      0.265
  SHALLOW         100   0.0410     0.050                                      0.009
  CHANNEL       30984                                               4.000     2.152

                                              Time of Concentration       2.426
                                                                        ========

2G1Pre
  SHEET           100   0.0410     0.400                                      0.265
  SHALLOW         100   0.0410     0.050                                      0.009
  CHANNEL       30984                                               4.000     2.152

                                              Time of Concentration       2.426
                                                                        ========
```

Lake Elizabeth (2G1) Model Results

```
MWY                                 Barren Ridge
                               Select Watershed Study
                            Los Angeles County, California

                       Sub-Area Land Use and Curve Number Details

 Sub-Area                                             Hydrologic  Sub-Area   Curve
Identifier          Land Use                             Soil       Area     Number
                                                        Group      (ac)
-------------------------------------------------------------------------------
2G1Post   Paved parking lots, roofs, driveways            C        35.744     98
          Paved parking lots, roofs, driveways            D       266.202     98
          Residential districts (1/3 acre)                C         66.96     81
          Residential districts (1/2 acre)                C       515.801     80
          Row Crop     Straight row [SR]        (good)    C         6.567     85
          Herbaceous                            (fair)    C         3.307     81
          Pinyon - juniper                      (fair)    C       573.992     73
          Sagebrush (w/ grass understory)       (fair)    C      4138.941     63

          Total Area / Weighted Curve Number                      5607.51     68
                                                                  =======     ==

2G1Pre    Paved parking lots, roofs, driveways            D       266.202     98
          Residential districts (1/3 acre)                C         66.96     81
          Residential districts (1/2 acre)                C       520.144     80
          Fallow    Crop residue [CR]           (poor)    C         3.317     90
          Row Crop     Straight row [SR]        (good)    C         6.567     85
          Pinyon - juniper                      (fair)    C       577.087     73
          Sagebrush (w/ grass understory)       (fair)    C      4167.233     63

          Total Area / Weighted Curve Number                      5607.51     68
                                                                  =======     ==
```

Unnamed Tributary of Mint Canyon (3I6)
Model Results

Unnamed Tributary of Mint Canyon (3I6) Model Results



Unnamed Tributary of Mint Canyon (3I6) Model Results

```
                       WinTR-55 Current Data Description

                          --- Identification Data ---

User:      MWY                                      Date:        4/28/2011
Project:   Barren Ridge                             Units:       English
SubTitle:  Select Watershed Study                   Areal Units: Acres
State:     California
County:    Los Angeles
Filename:  D:\TR55Approach3\3I6_Post.w55


                              --- Sub-Area Data ---

Name            Description              Reach        Area(ac)     RCN      Tc
------------------------------------------------------------------------------
3I6Post        Post-Construction        Outlet         1624.31     61     1.331
3I6Pre         Pre-Construction         Outlet         1624.31     61     1.331
3I6Double      Post-Doubled             Outlet         1624.31     62     1.331

Total area: 4872.93 (ac)


                              --- Storm Data  --

                    Rainfall Depth by Rainfall Return Period

  2-Yr        5-Yr        10-Yr       25-Yr       50-Yr       100-Yr      1-Yr
  (in)        (in)        (in)        (in)        (in)        (in)        (in)
--------------------------------------------------------------------------------
  3.18        4.24        5.11        6.33        7.3         8.29         2.4

Storm Data Source:               User-provided custom storm data
Rainfall Distribution Type:      Type II
Dimensionless Unit Hydrograph:   <standard>
```

Unnamed Tributary of Mint Canyon (316) Model Results

```
MWY                              Barren Ridge
                            Select Watershed Study
                        Los Angeles County, California

                                  Storm Data

                    Rainfall Depth by Rainfall Return Period

   2-Yr       5-Yr       10-Yr      25-Yr      50-Yr      100-Yr     1-Yr
   (in)       (in)       (in)       (in)       (in)       (in)       (in)
--------------------------------------------------------------------------------
   3.18       4.24       5.11       6.33       7.3        8.29       2.4

Storm Data Source:             User-provided custom storm data
Rainfall Distribution Type:    Type II
Dimensionless Unit Hydrograph: <standard>
```

Unnamed Tributary of Mint Canyon (3I6) Model Results

```
MWY                              Barren Ridge
                            Select Watershed Study
                       Los Angeles County, California

                             Watershed Peak Table


 Sub-Area             Peak Flow by Rainfall Return Period
 or Reach  ANALYSIS:     5-Yr      10-Yr      25-Yr      50-Yr     100-Yr       1-Yr
Identifier    (cfs)     (cfs)      (cfs)      (cfs)      (cfs)      (cfs)      (cfs)
--------------------------------------------------------------------------------
SUBAREAS
3I6Post       207.14     553.28     922.87    1521.74    2044.30    2608.96      52.50

3I6Pre        207.14     553.28     922.87    1521.74    2044.30    2608.96      52.50

3I6Double     233.77     599.82     980.78    1597.29    2130.03    2708.35      64.35


REACHES

OUTLET        647.91    1704.43    2824.71    4640.51    6212.13    7920.25     169.18
```

Unnamed Tributary of Mint Canyon (3I6) Model Results

```
MWY                                 Barren Ridge
                               Select Watershed Study
                            Los Angeles County, California

                           Hydrograph Peak/Peak Time Table

 Sub-Area        Peak Flow and Peak Time (hr) by Rainfall Return Period
 or Reach  ANALYSIS:      5-Yr      10-Yr      25-Yr      50-Yr     100-Yr       1-Yr
Identifier     (cfs)      (cfs)      (cfs)      (cfs)      (cfs)      (cfs)      (cfs)
            (hr)       (hr)       (hr)       (hr)       (hr)       (hr)       (hr)
---------------------------------------------------------------------------------------
SUBAREAS
3I6Post        207.14     553.28     922.87    1521.74    2044.30    2608.96      52.50
            12.94      12.84      12.78      12.73      12.71      12.76      13.14

3I6Pre         207.14     553.28     922.87    1521.74    2044.30    2608.96      52.50
            12.94      12.84      12.78      12.73      12.71      12.76      13.14

3I6Double      233.77     599.82     980.78    1597.29    2130.03    2708.35      64.35
            12.92      12.79      12.74      12.73      12.76      12.73      13.12


REACHES

OUTLET         647.91    1704.43    2824.71    4640.51    6212.13    7920.25     169.18
```

Unnamed Tributary of Mint Canyon (3I6) Model Results

```
MWY                                    Barren Ridge
                                  Select Watershed Study
                              Los Angeles County, California

                                  Sub-Area Summary Table

 Sub-Area   Drainage     Time of      Curve  Receiving     Sub-Area
Identifier    Area    Concentration  Number    Reach      Description
              (ac)        (hr)
--------------------------------------------------------------------------------
3I6Post      1624.31     1.331         61     Outlet    Post-Construction
3I6Pre       1624.31     1.331         61     Outlet    Pre-Construction
3I6Double    1624.31     1.331         62     Outlet    Post-Doubled

Total Area:   4872.93 (ac)
```

Unnamed Tributary of Mint Canyon (3I6) Model Results

```
MWY
                              Barren Ridge
                         Select Watershed Study
                     Los Angeles County, California

                  Sub-Area Time of Concentration Details

 Sub-Area      Flow              Mannings's     End      Wetted                 Travel
Identifier/   Length    Slope        n         Area    Perimeter   Velocity     Time
               (ft)    (ft/ft)               (sq ft)     (ft)      (ft/sec)     (hr)
--------------------------------------------------------------------------------------
3I6Post
  SHEET          100   0.0810      0.400                                        0.205
  SHALLOW        100   0.0810      0.050                                        0.006
  CHANNEL      16131                                                4.000       1.120

                                                 Time of Concentration          1.331
                                                                              ========

3I6Pre
  SHEET          100   0.0810      0.400                                        0.205
  SHALLOW        100   0.0810      0.050                                        0.006
  CHANNEL      16131                                                4.000       1.120

                                                 Time of Concentration          1.331
                                                                              ========

3I6Double
  SHEET          100   0.0810      0.400                                        0.205
  SHALLOW        100   0.0810      0.050                                        0.006
  CHANNEL      16131                                                4.000       1.120

                                                 Time of Concentration          1.331
                                                                              ========
```

Unnamed Tributary of Mint Canyon (3I6) Model Results

```
MWY                            Barren Ridge
                          Select Watershed Study
                       Los Angeles County, California

                 Sub-Area Land Use and Curve Number Details

 Sub-Area                                        Hydrologic   Sub-Area    Curve
Identifier           Land Use                       Soil        Area      Number
                                                   Group        (ac)
--------------------------------------------------------------------------------
3I6Post   Paved parking lots, roofs, driveways        C        19.856       98
          Residential districts (1/2 acre)            B        28.225       70
          Residential districts (1/2 acre)            C         5.327       80
          Sagebrush (w/ grass understory)     (fair)  B       542.841       51
          Sagebrush (w/ grass understory)     (fair)  C       667.279       63
          Sagebrush (w/ grass understory)     (fair)  D       360.777       70

          Total Area / Weighted Curve Number                  1624.31       61
                                                              =======       ==

3I6Pre    Residential districts (1/2 acre)            B        28.225       70
          Residential districts (1/2 acre)            C         5.327       80
          Sagebrush (w/ grass understory)     (fair)  B       547.416       51
          Sagebrush (w/ grass understory)     (fair)  C       675.248       63
          Sagebrush (w/ grass understory)     (fair)  D        368.09       70

          Total Area / Weighted Curve Number                  1624.31       61
                                                              =======       ==

3I6Double Paved parking lots, roofs, driveways        C        39.712       98
          Residential districts (1/2 acre)            B        28.225       70
          Residential districts (1/2 acre)            C         5.327       80
          Sagebrush (w/ grass understory)     (fair)  B       538.267       51
          Sagebrush (w/ grass understory)     (fair)  C       659.311       63
          Sagebrush (w/ grass understory)     (fair)  D       353.464       70

          Total Area / Weighted Curve Number                  1624.31       62
                                                              =======       ==
```